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By

James Ray Benson

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The Dissertation Committee for James Ray Benson
Certifies that this is the approved version of the following dissertation:

Mental Models of Diverse, High-Achieving

Elementary Schools in Texas

Committee:

_____
Michael Thomas, Supervisor

_____
Nolan Estes

_____
Donald Phelps

_____
Norvel Northcutt

_____
Chandra Muller

Mental Models of Diverse, High Achieving Elementary Schools in Texas

by

James Ray Benson, B.A., M.C.M., M. Ed.

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Dedication

This work is dedicated to my family by birth, by marriage, and by faith. These are the people who have given me understanding of things greater than self and of worlds beyond sight.

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Mental Models of Diverse, High Achieving

Elementary Schools in Texas

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Supervisor: Michael Thomas

This study examined how the mental models of teachers related to equitable academic achievement for students. The underlying causes of the persistent performance gaps between the achievement of minority students and White students were also examined in this study. Although educational reform movements aimed at improving academic achievement have had sporadic success, performance gaps continue. The way in which schools conceptualized cultural and class differences was suggested as one critical underlying issue.

The issue of cultural and class differences was analyzed from a review of literature addressing the role of class and culture in education. The main sources of this literature were Critical Theory, Multicultural Education, Democratic Schooling, the Chicano movement, African American educational perspectives, and Texas Education Agency information on Texas public elementary schools.

The study relied on both quantitative and qualitative methodologies. Interactive Qualitative Analysis (IQA) techniques were used to analyze processes and systems through focus groups. The focus groups were drawn from high achieving, ethnically diverse elementary schools. Some of the schools also exhibited high equity on achievement measures such as the TAAS, while others were chosen because of the achievement gap between their White and minority students. The results of the IQA were used to better understand the mental models operating in HiDEA (High Diversity, Equity and Achievement) and Gap Elementary Schools in Texas. This methodology provided rich contextual data in addition to the findings from the quantitative portion of the study which consisted of a statistical analysis of factors identified in the literature as related to equity and achievement.

The findings revealed significant but weak relationships between factors related to achievement and equity in the literature. Equity factors were strongly related to achievement in diverse, high performing elementary schools. These schools have done something to eliminate or reduce these factors. The data on the schools' mental models suggested that certain differences in the structure and content of the models could account for the differences in performance of White and minority students.

Based on these findings, the strengths and limitations of different mental models for decreasing the achievement gap between White and minority students in diverse schools were identified. The analysis of the mental models has applications to the practice of district administrators, campus administrators and teachers.

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CHAPTER I

Introduction

The reauthorization of the Elementary and Secondary Education Act, known as the No Child Left Behind Act of 2002, nationalizes the goals of raising achievement while closing achievement gaps between White and minority and between middle class and economically disadvantaged students. The new law sets the expectation that within twelve years every American student will be able to demonstrate mastery of his/her state's challenging curriculum if educators, legislators, and the public are able to achieve the goals of this law. The history of American education would suggest that many changes would be required to ensure high achievement for all children.

Many studies have been done that relate the lower performance of minority groups compared to the dominant group to social factors such as family income, family structure, parents' educational attainment and home ownership (McCallum and Demie, 2001). The McCallum and Demie study also suggested that ethnicity compounded the negative effects of these social factors. In other words, ethnic poor achieved less well than White poor students and lower than would be predicted based on the study of social factors. They also found that the Asian group performed significantly better than the Hispanic group that had more positive contextual factors demonstrating the possibility of the presence of a cultural factor. Increasing achievement had to do with instructional factors to be sure, but also with social and cultural factors. These studies have prompted some to propose that background and

prior achievement factors be considered in accountability plans (Elmore, Abelmann, and Fuhrman, 1996).

Business leaders and policy makers have adopted the 'standards' approach in an attempt to improve American education. The standards approach has not only involved curricular and instructional aspects but assessment and accountability factors as well (Linn, 2000). The standards vision in the 1950s and 1960s promoted a differentiated curriculum based on testing (Linn). This vision was quite different from the current standards vision of a challenging curriculum for all students. Although the new standards vision has a more equitable face value; it is not without its opponents who believe it to be quite discriminatory, especially in regard to its consequences for students. Still, the position of Ravitch and others was that America has an implicit national curriculum that has been low for most students, especially minority and poor students (1995). She argued that making the national curriculum standards explicit would raise the expectations and quality of education for those who need it the most. Equity and excellence are inseparable components of academic improvement models, especially the current standards movement.

Some researchers have noted that although certain reform models have experienced success, their effect on diverse school populations has not been generalized. "Unfortunately, not only was it impossible to generalize these results (*of models like Effective Schools*) to all types of schools, but the overall disparity between mainstream middle-class students and low-income students from diverse

backgrounds continued to exist (Miramontes 1997, p. 27)." Due to the overlap of paradigms between models, many effective reform models have components that are culturally sensitive, but without directly addressing the destructive force of negative cultural practices, these models have little hope of achieving consistent results among diverse school populations.

Can highly diverse schools operate in such a fashion as to eliminate the relation between class and race to student achievement? Or should state accountability plans simply take into account those factors as a way to avoid penalizing minority and poor students from high stakes consequences? In what ways can the values of equity and excellence be mutually supportive?

Statement of the Problem

The performance of traditional minority groups compared to White students on accountability based assessments still challenges educators. The problem of 'performance gaps' surfaced immediately when states such as Texas began using assessment based accountability systems in the early 1980s and were already evident in earlier assessment data (Linn, 2000). During that period of time, the performance of all students has risen and the 'performance gap' has decreased, but it remains a significant challenge (Haycock 2001). The extent of the decrease in the performance gap has been questioned by some who cite the 'ceiling effect.' The ceiling effect has been created by White students who have mastered the assessment and are prohibited by the ceiling of test difficulty from showing any further increase in achievement. This problem has persisted because the 'performance gap' may

really be only one symptom of a more pervasive problem. Other symptoms of the same problem seen in the school system are the over representation of minorities and poor students in discipline placements, Special Education programs, and basic or remedial courses as well as their under representation in Gifted programs, Advanced Placement courses and academic extracurricular activities. The academic performance gap and the other 'gaps' may reveal a misalignment of schooling practices with the cultures of many minority students that significantly affects their school experience.

Evidence abounds that all groups of students can learn equally well, even groups of students faced with poverty, a first language other than English, high mobility and a disintegrating social environment (Reyes et al, 2000). National, state and local schooling systems are serving some groups of students better than other groups of students. Segregation accounted for lower achievement by Black students in one study, after controlling for poverty. In the same study, Black students attending a segregated elementary school were less likely to learn in racially balanced secondary schools than Black students educated in racially balanced elementary schools. Finally the study indicated that district resources were not equally distributed to poor, Black schools (Mickelson, 2001). The minority, low-income schools are characterized by lower achievement, less challenging curriculum, fewer instructional resources and fewer well-trained, experienced teachers when compared to the segregated White schools (Orfield 1996). Without an imminent end or radical

reversal of the mental models that created this trend, the increasing number of students finding themselves in schools that are often out of touch with their communities will continue to be a cause for concern.

Governmental education agencies, universities and local educators have worked consistently to improve the learning system and eliminate performance gaps. The record of improving scores attests to this concerted effort. The performance gaps may not be due to overt attempts to thwart the education of certain groups of children, but to the misdiagnosis of the problem. Working harder and harder on the symptom may not fully alleviate the real problem. To some researchers, the data mean that higher standards, more challenging curriculum and better teachers are needed, but this interpretation may fail to get to the heart of the problem (Haycock 2001). The continued existence of performance gaps signals the existence of a group of students that have not benefited from the instructional, curricular and administrative practices that have been successful with White children. The persistence of the gaps may indicate a deeper problem, an alienation gap. The students who either overtly resist or simply cannot make a personal connection with the reform practices comprise the alienation gap. The alienation gap is the manifestation in the achievement data of the cultural and class barriers that separate students from instruction, curriculum, educators and schools.

During the last half century, several conceptual frameworks have attacked the problem of the alienation gap; cultural models, like Banks's Multicultural Education and Cardenas and Cardenas's Theory of Incompatibilities, and class models, like

Paulo Freire's variation of Critical Theory. Some researchers have disagreed as to the effectiveness of a cultural differences approach to the problem (Vogt et al 1993; Erickson 1993). The latter researchers assert that all students can achieve equally well if school administrators implement certain critical strategies. These different approaches to closing the achievement gap most likely have significant strengths and weaknesses. An examination of the mental models that these theories represent could demonstrate the relationship between the espoused theories, theories in practice (mental models), and educational outcomes.

Purpose of the Study

The purpose of this study was to determine whether educators in HiDEA (high diversity, equity and achievement) schools demonstrated unique attitudes and actions from educators in Gap (high diversity and achievement, but with several significant gaps) schools. It was hypothesized that different attitudes and actions may emanate from mental models held by staff members in the HiDEA and Gap Schools. Some significant studies have been done within high poverty, high minority schools that were also high performing (Reyes et al, 1999; Ragland et al 1999; Carter, 2000; Skrla et al, 2000). These studies did not use a mental models approach, but the characteristics of the schools and staff members listed in their findings could easily be viewed as mental models. The possibility emerged from these studies that the success of poor minority schools could be attributed more to the mental models in operation in those schools than to resources or specific instructional strategies. Only two other

kinds of schools were left to study, White, middle class schools which have not been perceived as having an achievement problem and diverse schools. This study, while similar in some ways to those in high minority, high poverty schools, was unique in its choice of the population and its focus on mental models.

Research Questions

Psychologists have described mental modeling as the way people make sense of their environment and make decisions (Craik, 1952; Monteil and Huguet, 1999; O'Malley and Draper, 1992). Intuitively there is a relationship between the decisions of teachers and the achievement of students in their classrooms. The existence, components and nature of the relationship is the focus of this study.

What are the relationships of the shared mental models of teachers to the achievement of White and minority students? Previous research has shown a relation between contextual factors and student achievement, but this study looked at mental models of teachers and schooling practices that eliminated those relationships. If some schools can eliminate the relationship between the student's home background and school performance, why can't all schools do it? This study sought to answer the following research questions:

Question 1: What are the elements of the mental models of HiDEA (High Diversity, Equity, and Achievement) and Gap (High Diversity and Achievement, but with significant achievement gaps) Schools?

Question 2: How do the elements within each mental model relate to each other?

Question 3: How do the mental models relate to each other?

Design of the Study

This study will briefly develop the elements of the problem, review the literature, investigate the phenomenon of equity and achievement in highly diverse schools, and identify culturally based mental models based on the investigation. The literature about effective schooling for minority groups by minority educators accentuates seven factors that together form the core processes of a culturally aligned learning system that draws conceptually from Critical Theory, Multicultural Education, Democratic School Philosophy, and historically, from the Chicano and Afrocentric movements. Business leaders, politicians, and some university think tanks support a model based on the standards approach.

The design for this study was a descriptive study using a descriptive, qualitative approach. A survey of the population of diverse, high performing schools revealed three segments of the population that could possibly have different mental models. These segments were Gap Schools, Early HiDEA Schools (HiDEA Schools that had demonstrated one or two years of equity and high achievement), and Mature HiDEA Schools (HiDEA Schools that had a record of at least three years of equity and high achievement). From these three groups several campuses were chosen in different geographic areas of the state to serve as focus groups for the Interactive Qualitative Analysis (IQA). An analysis was done to determine the components and relationships of the mental models in HiDEA and Gap Schools. Secondly, another analysis was done to determine the relationships between the two different mental

models. Finally, the mental models were compared to those suggested by the literature.

The Delimitations

This study was limited to schools in Texas and did not extrapolate the results beyond the context of the state. The population of schools for the study was limited to elementary schools.

This study used a single measure of achievement, the Texas Assessment of Academic Skills (TAAS), as the indicator of academic achievement for the school. Additionally, because the TAAS is only administered to students in grades three through eight and ten, the measures of academic achievement for the schools did not have measures for student achievement in grades two and below.

The Definition of Terms

Academic achievement. Academic achievement is the measure of attainment of specific educational objectives and outcomes. For the purpose of this study, academic achievement is expressed in terms of scores on the TAAS. The TAAS assesses the mastery of the state curriculum, Texas Essential Knowledge and Skills (TEKS).

Dominant culture refers to the group that is deemed to control resources, media, myths, and general public values.

Colonization refers to the domination of one group by another and includes the imposition of a control of resources, communication, myth and values.

Marginalized group refers to the group imposed upon by the effects of

colonization.

The Significance of this Study

As policymakers further entrench the mechanisms of standards based educational improvement, equity will continue to be an essential concern. This study sought to add to the theory of culture and education as well as provide school practitioners with an analysis of the mental models and their potential for equitable academic improvement.

Organization of the Study

The report of this study is divided into five chapters. Each chapter is intended to frame the discussion of the effect of the alignment of schooling practices as revealed through the mental models of its practitioners and student cultures on academic achievement. Chapter I introduces the context of the study; presents the statement of the problem, the purpose of the study, research questions; describes the design, limitations, and delimitations of the study; and outlines the significance of the study in terms of adding to knowledge, theory and practice. Chapter II contains a review of the literature which is relevant to the context of this study, including research on Critical Theory, Multicultural Education, Democratic Schooling, Chicano movement, African American and sociological perspectives. The methodology and procedures for the study are presented in Chapter III. Chapter III includes a broader description of the design of the study, the instrumentation selected, the selection of participants, the procedures for data collection and the procedures for data analysis. Chapter IV contains a thorough presentation and analysis of the data collected from

the study. Finally, the summary of findings, conclusions, recommendations and suggestions for further study are outlined in Chapter V.

Summary

The role of class, culture and context has clearly been shown to have a significant relationship with academic performance, and the belief that this relationship has an impact on student learning has long been supported in the literature. When culture has been seen as static and hereditary, researchers have found no practical reason to investigate its role in education. However, when culture has been understood as contextual, malleable and dynamic, researchers and educators have found significant culture based strategies that have held promise for improving learning. These theories, programs and strategies have been synthesized in this study, as they seem to represent aspects of a mental model in operation to varying degrees in some schools.

Although a significant amount of research has looked at the relationships of culture and education, there is still a need for practical models for local educators who want to improve academic achievement for all students.

This study sought to examine the relationship between the alignment of schooling and student culture s with student performance. This study sought to find the conditions in which minority and poor students would feel as comfortable as White middle class students feel in school and perform as well. This study sought to identify whether diverse schools that had closed the gap were characterized by a

mental model, a mindset, different from that present in schools with significant achievement gaps.

This chapter introduced the context of this study and the need for further exploration of the relationships between mental models, culture, class and achievement. In addition, the purpose of the study was presented along with corresponding research questions and the design, limitations and delimitations of the study.

CHAPTER II

Review of the Relevant Literature

Overview of the Problem

Members of a community generally feel that the school should reflect and support their culture. In diverse communities, schools generally comprised largely of White teachers have found it difficult to reflect, or even understand, the minority community's culture . The relationship between culture and class in education systems and communities has created questions of *power* and *purpose*. While school districts are managed by locally elected school boards that should be able to establish policies and procedures for the integration of school and community culture, state legislatures, heavily influenced by business interests and regional think tanks, exercise immense power in the local school through legislated regulations and funding guidelines. In this environment, school boards too often make decisions in favor of those in the community whose interests are aligned with those of business. Minority parents lose their voice in creating a curriculum, influencing instruction, and forming a real part of the educational community.

In addition, many marginalized members of American society believe that education is their principal decolonizing tool. Of course this hope clashes with the belief of many in the dominant group that education is the most effective tool for socializing marginal members into the mainstream. The dissonance between these beliefs about schooling challenges the dominant culture controlled model because to

embrace the principle of schooling as decolonizing is to accept the paradigm of critical theory with its emphasis of working on social justice and the democratization of all social institutions. Accordingly, E. D. Hirsch, Jr. wrote about young people (for young people substitute Hispanic, African-American, women, etc.), "The trouble is that, from the standpoint of their literacy and their ability to communicate with others in our culture, what they know is ephemeral and narrowly confined to their own generation. The decline of literacy and the decline of shared knowledge are closely related, interdependent facts (1987, p. 7)." Explicitly Hirsch makes an argument that is obvious. Implicitly the message is that young people's *(or any minority group's)* knowledge is not relevant to mainstream culture, and in regard to mainstream culture, they have a 'literacy deficit.' This culturally chauvinist attitude embedded in policies and organizational practices creates cultural dissonance between community and school, between minority and dominant culture groups. The power to control the content of curriculum, the methods of instruction and the purpose of schooling is implicitly held by the dominant culture. Practices such as tracking, low expectations, inferior funding, and a narrowed curriculum conspire to exclude minority and poor students from the 'shared knowledge.' "The attitudes and general lack of understanding with regard to the interaction between students' culture and the culture of schooling have created cultural deficit and compensatory models in education. These have become the traditional mode of addressing educational concerns of linguistically and culturally diverse students, and directly influence curriculum selection and delivery (Miramontes, 1997, p. 13)." "Unfortunately, the

needs of linguistically diverse students *(or any minority culture student)* are usually seen as add-ons, and peripheral to the functioning of a total school. Until their needs are placed squarely in the mainstream of teaching, learning, planning, and educational reform, it is unlikely that these students will have access to equitable educational opportunities (Miramontes 1997, p. 9)."

A Mental Models Approach

"Thought models, or parallels, reality (Craik, 1952, p 57)." Kenneth Craik introduced the idea of mental models in 1952, and psychologists such as Philip Johnson-Laird, Yvonne Rogers and Ruth Byrne developed it into a theory that has been integral in the development of computational theory, HCI or Human-Computer Interaction, and in the last decade, has influenced business and leadership theory. Saito asserted that Johnson-Laird's development of the concept of mental models enlarged and enlightened Frederic Bartlett's theory of schemata (2000, p.88). According to Craik, thought involves perception of reality, internal representation through symbols, and expression or external representation that recreates perceived reality. Craik defined a mental model as a "system which has a similar relation-structure to that of the process it imitates (1952, p 51)." Symbols are the critical elements that make models possible. By symbols, Craik understood not only words and signs, but metaphors, analogies, and possibly even sounds, sights, feelings and other perceptions.

> " . . . the function of such symbolization is plain. If the organism carries a 'small-scale model' of external reality and of its own possible actions within

> its head, it is able to try out various alternatives, conclude which is the best of them, react to future situations before they arise, utilize the knowledge of past events in dealing with the present and future, and in every way to react in a much fuller, safer, and more competent manner to the emergencies which face it (Craik, 1952, p. 61)."

Mental models can be seen as mnemonic devices to help us remember details, laws, rules and relationships that we might otherwise forget. "To explain a phenomenon is to find a model that fits it into the basic framework of the theory and that thus allows us to derive analogues for the messy and complicated phenomenological laws which are true of it (Wilkes in Said et al, 1990, p. 63)."

'Distributed knowledge' refers to the connection between the mental model of individuals, their past experiences, the mental models of others and reality. O'Malley and Draper's work in human-computer interaction led them to suggest that people don't always need a complete model to operate in reality. In practice people often limit their model if they know that a computer, or another individual, with which (whom) they can interact has the rest of the model needed for the completion of a task (in Rogers et al, 1992). O'Malley and Draper suggested that in cooperative work, team members have models that overlap but not completely. This allows the team to have specialists, but also to perform adequately in the absence of one member.

The relation of an individual to the environment strongly influences the nature of the mental modeling of the individual. The social requirements, technical complexity, opportunity for communication, and tools related to a task can all influence how much individuals access distributed knowledge, shared mental models or guidance from a team member whose role has become part of the mental model.

In addition, people in larger groups tend to be less productive than those that work individually or in small groups (Monteil and Huguet, 1999, p. 120). This is referred to as 'social loafing.' In addition their analysis of the research led them to suggest that people produced more in cooperative working environments than in competitive environments. Public social comparison characteristic of competitive environments caused people to focus more on self than on the task. These research studies suggest that school leaders contribute to the quality and connectedness of shared mental models by the cooperative or competitive way they organize teacher work.

Individuals operating in a group have both individual and shared mental models. The individual mental models of group members can be envisioned as intersecting circles of a Venn Diagram. The mental models of individuals and groups are not only related, but they also interact. "The idea of a spiral-like development whereby distributed (or at least culturally shared) cognitions and one's own "solo" competencies are reciprocally developed . . .(Salomon 1993, p. 123)." Groups cannot only express their common model but also differentiate between it and their own individual model, or role in the group. Like cells in the body or DNA in the cells, group members carry the group's shared mental model with them, A, as well as their own, A1. Superintendents count on this as they hire principals from successful schools. They count on the principals individually having the 'successful shared mental model,' and their ability to implant it into a new context.

Peter Senge saw mental models as another skill to be managed for personal

and organizational success (1990). He counted it as a 'discipline,' along with personal mastery, shared vision, team learning and systems thinking. For Senge, the disciplines, including mental models, represented an approach based on gaining consciousness of one's ways of seeing and thinking. With this consciousness and an exercise of the skills of consciousness, the five disciplines, one could shift the mind much as one shifts the standard transmission of a car to get the best possible result in varying conditions.

Senge's definition of mental models seems very similar to a definition of culture. Both represent ways of seeing and acting based on ways of knowing. Mental models imply an individual context of knowing, while culture implies a group context of knowing. Mental models could be seen as the common thinking patterns of a group produced by common solutions to common challenges encountered in a common life experience that have become ritualized, a priori knowledge.

Yon suggested that people participate in a variety of cultures simultaneously and choose their responses to situations based on an acute sense of the cultural factors involved in a situation (2000). Yon's view of culture was not static, but dynamic and fluid. This dynamic view of culture suggests that people not only already employ a variety of mental models, but shift between them with sophistication. Yon did not suggest that people were aware of the cultural shifting or of strategizing related to their choices of cultural responses. Senge's approach urges leaders to be aware of the mental models, the shifting that is occurring and to develop a disciplined practice of shifting for attaining personal and organizational goals.

Developing the discipline of using mental models includes practicing 'openness,' 'merit based decision making, and 'localness (Senge, 1990).' Mental models become entrenched through the practice of defensive routines that protect people form painful and threatening situations. Practicing openness requires becoming conscious of thinking, suspending judgement, and exposing one's thinking for examination. Merit decision making excludes decisions based on 'turf,' or artificial authority. Localness argues for the validity of the knowledge of those doing the work. This concept has its parallel concepts in Critical Race Theory.

Morgan applied similar ideas to organizational science using the 'metaphor' concept (1998). He asserted that people use metaphorical thinking to frame their seeing and reacting. He wrote that even the concept of 'organization' is a metaphor. When metaphors are accepted, they become powerful controllers of perception and action. He cautioned that metaphors create insight, but also distort. He concluded that there could be no one 'correct metaphor' for structuring thought about a situation.

If these authors' arguments are correct, the educational systems that facilitate or hinder the academic achievement of minority students do not represent a single mental model, but a matrix of mental models that ebb and flow as conditions change. Taken together, they form a system of ways of thinking. Any one model cannot be correct or incorrect, but can be connected to likely outcomes. A mental models approach to the investigation of the achievement gap can free an analysis from fatalism or positivism. The mental models of White, middle class society have

strengths and limitations, just as the minority models do. Further these mental models are not necessarily mutually exclusive or isolated. Insights from both can be useful as well as limiting. Consciousness of the mental models in operation in schools with academic gaps and a strategic use of skills that allow for the analysis and adaptation of mental models could represent an opportunity for educators to improve student achievement.

Mental Models in Education Literature

The Deficit Model and Standards Based Education

The 'deficit model' is pervasive in American education. America's long history of ethnocentric colonization is the context for considering the young, immigrants, non-English speakers, and other powerless groups as deficient in culture, character and intelligence. Unfortunately schools have not been a liberating force, but an instrument of colonization and deficit remediation for the dominant group in society. "And to a large extent the continuity of the status quo depends on the existence of ethnic boundaries. These boundaries are reinforced by theories that situate school learning problems in students' homes (Miramontes 1997, p. 13)." "Educators' underlying attitudes toward students' families, cultures, and languages shape their instructional approaches and can result in very different academic outcomes for students from differing backgrounds (Miramontes 1997, p. 15)." Valenzuela identified this complex of schooling practices as 'subtractive schooling.' "It divests these youth of important social and cultural resources, leaving them progressively vulnerable to academic failure (1999, p. 3)." Educators who do not

value what students bring to school create cultural dissonance between the students' community where they are competent and school where they are less competent. Students seen by teachers and administrators as bringing value to the school are favored and consequently tend to perform successfully. "Studies of Korean students, for example, indicate that they tend to excel in U.S. schools, while their counterparts in Japan, where they are viewed as an inferior subgroup, tend to experience academic failure. The same phenomenon has been observed with Finnish children in Sweden (Miramontes 1997, p. 25)." It should be expected that as long as some students are devalued and marginalized 'performance gaps' will continue.

Sources often state the relation between the academic achievement of minority students and such factors as family income and parental educational attainment (Entwisle et al 2000). Although the relation is not in debate, the causes attributed to the relation are. The school's approach to low income, minority families and students may be the cause rather than a deficit on the part of the family. Delpit stated that "teacher education usually focuses on research that links failure and socioeconomic status, failure and cultural difference, and failure and single parent households. When teachers receive that kind of education, there is a tendency to assume deficits in students rather than to locate and teach to strengths (1995, p. 172)."

Another source of deficit thinking came to educational thought from economic and sociological theorizing. Economic theorists began discussing physical capital, then human capital as resources that grew with investment and were capable of

rendering personal gain. Students from families without a certain level of educational attainment have been thought to have a human capital deficit. Studies of immigrants and minorities who achieved beyond expectation based on their families' human capital introduced another capital, social capital.

Some children have parents with high levels of human capital yet perform lower than anticipated because these parents do not invest their human capital in their children, while some children with lower levels of human capital in their families perform higher than expected because of the strong social capital, or relational strength, in the family (Lareau, 1989). Social capital theorists suggest that when adults and children form strong relationships, social capital is high and student achievement can be expected to increase (Coleman and Hoffer 2000). Human capital theory manifests an implicit deficit perspective inasmuch as it the accepts dominant culture, including the knowledge and forms of learning it prescribes, as more valued than that of minority groups. The social capital, and related cultural capital theories, are less deficit oriented and explain to some degree why some minority students overcome culture and class barriers to success.

Deficiency perspectives can cause schools to address symptoms rather than the problem. For example, initiatives such as busing, class size reduction and the self-esteem movement address the problems caused by racism and classism but not racism and classism themselves (Solorzano and Yosso in Tejeda et al, 2000, p. 56).

The achievement gap is often attributed to the culture of the student and their family. Parenting style is seen as the critical factor. Arzubiaga, Ceja and Artiles (in

Tejeda et al, 2000, p. 93) discussed the relationship of authoritative and authoritarian parenting styles to the relative achievement of Mexican, Black and White male and female students. The authoritative style demonstrated both high demands and high responsiveness while the authoritarian style lacked the responsiveness.

Authoritarian upbringing in early childhood had negative effects on White girls more than Black girls and White boys more than Latino boys. They suggested that the variation in effect was a result of the power relationship of the parents. Parenting styles were related to grades in school for White students but not for Black students, and authoritarian parenting had no effect on Latino boys but negative effect on Latino girls. They suggested that the reason the authoritarian parenting style was related to high achievement in Asian families was the mediating effect of the peer group. The Asian peer group was suggested to support high achievement. The authors believed that this did not mean that Mexican students who lived with authoritarian parents were not supported by a peer group that valued education. Arzubiaga et al (2000) pointed to a study in progress which showed that the authoritarian nature of many Mexican parents was related to their immediate environment. That is, parents were frequently authoritarian when they perceived danger in their neighborhoods, such drugs, gangs, promiscuity and delinquency. Under these conditions, the researchers argued, parents were actually showing responsiveness to the needs of their children by setting tighter limits and allowing fewer freedoms. These parents also helped their children with homework in

nontraditional means. Often these parents did not have the language control or educational background to help their children, but they encouraged cooperation between children to complete homework. The authors concluded that educators needed to look at the environment of the students and their families before blaming culture for low achievement.

The characteristics perceived as deficits represent strengths the dominant culture has not been ready to acknowledge and verify. In an educational system that prioritizes the White, male value of competition, educators have sometimes been blind to values, such as cooperation, altruism and group commitment.

The Cardenas-Cardenas Theory of Incompatibilities (Cardenas and Cardenas, NEA Journal, Feb. 1972) asserted that the 'deficit' in achievement was due to a lack of compatibility between the characteristics of minority children and the characteristics of a typical instructional program. The theory grouped 40 incompatibilities into five groups: poverty, culture, language, mobility and societal perceptions. The theory accepted the retarding effect of poverty on children, but proposed that the deficit was created by an instructional program that failed to adjust to the unique developmental patterns of children of poverty. A system that would adjust to these differences could eliminate the effects of poverty rather quickly, the theory suggested. The theory also asserted that an instructional program that was devoid of familiar history, contained negative cultural stereotypes, failed to adjust to cultural learning preferences related to degree of abstraction, verbalization and cooperation would be incompatible with many students of non dominant culture.

Language was identified as the third area of incompatibility. The authors believed that a child could not learn if (s)he did not understand the language. A compatible language program should continue the cognitive development of the child in her/his birth language, develop English as a second language and further extend her/his birth language system. Other studies support the idea that developing biculturally improves achievement (Buriel in Hurtado and Garcia, 1994, p. 1997). Further the authors of the theory proposed that schools that failed to take into account the mobility of some students would also fail to adapt to their learning needs. An instructional program that was mobile or that was highly individualized would be more compatible. Because the dominant society continually expressed a negative perception of the child's home, language, culture and values, minority students tended to have a negative self-image. By addressing the incompatibilities of the instructional program for minority students, schools could improve the self-image of these students. Such an instructional program would validate the student's home, language, culture and values. In addition, educators could provide more immediate constructive feedback that help students experience more success. The authors believed that success was a proven builder of positive self-image.

The African American Model, Multiculturalist Education and Afrocentric Education

Banks documented the educational colonization and resistance that characterized the history of education in America. Several movements have moved the U.S. toward more ethnocentric educational practices, such as Cultural Pluralism,

the Intergroup-Education Movement and Multiethnic Education. He also noted that movements such as Nativism and the Melting Pot philosophy worked to maintain the assimilationist educational policies in place (1988). Banks also noted the significant increase in immigration and the nature of arriving immigrants (most were non-English speaking) in the 1970s as having an impact on the educational debate related to culture. The impact of increased immigration and the growth rate of minority groups was felt in the school system. One implicitly assimilationist policy with great impact has been the accountability movement.

"It (multiethnic education) is concerned with modifying the total educational environment so that it better reflects the ethnic diversity within a society. This includes not only studying ethnic cultures and experiences but also making institutional changes within the school so that students from diverse ethnic groups have equal educational opportunities (Banks 1988, p. 38)." Early researchers of multicultural education envisioned it as a school-wide reform movement. "Educators who want their schools to become multiethnic must examine their total school environment to determine the extent to which it is monoethnic and promotes dominant group hegemony (Banks 1988, p. 40)." Although a vision and a framework for a culturally responsive reform movement were created, the early work and later research have not been effectively organized and communicated as a school-wide reform movement.

The multicultural model challenges the deficit perspective for a more positive concept. Moll introduces the idea of 'funds of knowledge (1990).' "From this

perspective, communities are viewed as rich sources of knowledge, expertise, and information that may be overlooked in traditional approaches to education. By learning about the strengths of the community and attempting to incorporate these funds of knowledge into curriculum planning, educators can reaffirm the importance of families and provide ways for them to authentically participate in their children's education (Miramontes 1997, p. 211)." By relinquishing the deficit perspective, educators cannot only build on the strengths of their students, but also develop more positive relationships with parents and community members that facilitate involvement. A multicultural approach addresses only half the problem, however. Multiculturalism addresses the cultural dissonance, but not the social class dissonance. In a study done to gauge the effectiveness of multicultural theory and practice, one researcher concluded that "multicultural education supports, rather than changes, existing relations of power and control" "by placing culture (instead of class) at the center of social relations (Harrington 1997, p. 173)." Later conceptions of multiculturalism would address this disparity.

McLaren and Farahmandpur (in Tejeda et al, 2000, p. 22) envisioned a multiculturalism integrated with critical thought. Critical multiculturalism emphasizes the political activism and social mobilization aspects of the story of marginalized people. Critical multiculturalism encourages the formation of political alliances between marginalized groups to attack social and economical inequality. Critical multiculturalist curriculum challenges class, race and gender oppression and

social reproduction perpetrated by the dominant social group. Finally critical multiculturalist instruction encourages students to question the multiple meanings of race, class, gender and sexuality in society and pressure democracy to produce its promised rewards.

In the early 1980s, a concerned business community led states to implement accountability systems that relied on one measure of academic performance alone, a test, which led to perceived performance gaps. These assessments and their high stakes consequences for minority students have been debated in the legislature, university classroom and courtroom over the last decades.

The Chicana Model and Bilingual Education

The prohibition of literacy for Blacks in the United States until Reconstruction, industrial education and the segregated, unfunded education of Black children until only a few decades ago have been more widely communicated than the history of educational discrimination against Hispanic children in the United States. In 1848 the Treaty of Guadalupe Hidalgo was signed which ended "the Mexican-American War and formalized the conquest and appropriation of half of Mexico's territory into what is now the U.S. Southwest. The treaty guaranteed Mexican-origin people in the appropriated territory 'the enjoyment of all the rights of citizens of the United States according to the principles of the Constitution.' (Article IX) (Moreno, 1999, p. ix)." Within a year, the United States broke the treaty by conferring

> full political rights only upon free Whites, while Blacks and Indians could be enslaved and indentured in most states. People of mixed European and Indian

> ancestry could not be enslaved, but they could be barred from voting, practicing law, becoming naturalized citizens, and, in many states, marrying Anglo-Americans (Menchaca in Moreno, 1999, p. 19).

"In 1836 Afromestizos were given the dubious choice of remaining in Texas and becoming slaves or being deported to Mexico (Menchaca in Moreno, 1999, p. 22)."

Schooling for Mexican-American students changed from mainly informal to formal during the 1850s. Catholic, Protestant, secular private and public schools were established across the Southwest. Spanish was the language of instruction. Catholic school personnel and materials were common, even in public schools, and Mexican culture was common in the curriculum. However, by the 1870s until the turn of the century, the increasing dominance of the Anglo population was able to replace English for Spanish as the language of instruction, Protestant perspectives for Catholic materials and anti-Mexican attitudes for Mexican culture in the curriculum. "By the century's end, public education had become an essentially American public institution ready to assume its role of Americanizer in the Southwest (San Miguel, Jr. in Moreno, 1999, p. 45)."

At the turn of the twentieth century, American business coveted Mexican workers for the agricultural, mining, textile and railroad industries (Gonzalez in Moreno, 1999, p.56). The U.S government forcefully conveyed business interests to the Diaz government in Mexico. The government and the business community encouraged both legal and illegal immigration. Mexicans were highly desirable workers, but they were segregated in every other area of life. This had an important impact on the families they brought with them.

In the Southwest, Mexican students were segregated because of their cultural differences, language differences, IQ differences and their alleged genetic propensity for employment in the labor market (Gonzalez in Moreno, 1999, p. 56). The urge to acculturate the Mexican students came partially from an Euro-centric perspective, but also from a growing fear of communism and socialism at the time (Gonzalez). Mexican traits targeted for change were unthriftiness, fatalism, promiscuity, shiftlessness, irresponsibility, lack of ambition, uncleanliness, and a propensity to alcoholism (Gonzalez). E. E. Davis of the University of Texas was quoted as saying, "There is but one choice in the matter of educating these unfortunate children and that is to put the 'dirty' ones into separate schools till they learn how to 'clean-up; and become eligible to better society (Gonzalez)."

By the 1920s, William James, Lewis Terman, Henry Goddard, E. L. Thorndike and other social scientists supported the commonly accepted doctrine of the racial distribution of intelligence (Gonzalez). This theory assumed that intelligence was a stable trait inherited from a 'stock' whose intelligence potential was randomly chosen by nature. IQ testing became the tool for scientifically segregating races thought to be intellectually inferior. An educational tenet of this theory was the appropriateness of differentiated curriculum, environment, educational goals, and instructional methods for Mexican students with lower potential than their white counterparts (Gonzalez). Studies by Lewis Terman at Stanford, the Division of Psychology and Educational Research of the Los Angeles School District and

investigations of other California school children 'proved' the lower intellectual potential of Mexican students (Gonzalez). In the 1930s scientific opinion shifted from a genetic to a culturally based interpretation of IQ scores. This shift had no impact on the strategies of school systems in regard to Mexican children. The new cultural perspective of intelligence just brought the criticism of Mexican culture to the fore as the driving argument for continued segregation and differentiation.

School districts responded by not only segregating Mexican children but by giving them an industrial based curriculum. Zavala Mexican School in Austin, Texas was the "only elementary school in Austin . . . equipped with an industrial arts shop and home economics laboratory (Gonzalez)." Students not deemed capable of industrial education were allocated to special education for the mentally retarded or feeble-minded. The track for these students was factory floor labor skills (Gonzalez). Interestingly these policies were not only seen to meet the educational needs of the Mexican students but also the sociocultural needs of society and the personnel needs of the economy. While the prospects of a Mexican student in school in the 1920s and 1930s were not bright, they were better than those of migrant students. A Texas economist of the time estimated that in Dimmit County only 25% of Mexican children were enrolled in school and far fewer were in attendance (Gonzalez). As late as 1945, only half of the Mexican children in Texas attended school (Gonzalez).

As succeeding generations of Americans of Mexican descent felt a growing sense of identification with the American ideals of liberty and opportunity, and as their resentment over the conditions of the schools increased, they began to struggle

against the oppression of the dominant society. In 1930 Mexican parents in Lemon Grove, California boycotted and successfully sued the district over race-based segregation. In 1945 a long battle between Mexican parents and the school board in Garden Grove, California resulted in a class action lawsuit alleging race-based segregation in violation of the Fourteenth Amendment. The Board argued that the conditions of *Plessy* were met in that the facilities were 'separate but equal,' and that the special courses required of Mexican students such as Americanization and English, met strictly educational objectives. In 1946 Judge Paul McCormick ruled the district in violation of the Fourteenth amendment in that 'separate implies inferior.' The case was known as *Mendez v. Westminster* (Gonzalez). The case was followed closely by Robert Carter and Thurgood Marshall who used the same arguments eight years later in the *Brown v. Board of Education* case as part of the NAACP legal defense team (Gonzalez).

State legislatures, state educational agencies and local school districts were generally able to evade and ignore the requirements of these legal decisions during the 1950s and 1960s. Urbanization and White flight added to the *de facto* segregation of Mexican school children in the 1960s.

During these decades educators such as George I. Sanchez, social organizations such as LULAC (the League of United Latin American Citizens), and student activists increased their attacks on segregation and other discriminatory practices in education. Starting about 1968, students protested their educational

conditions by boycotting in California, Texas, Colorado and Arizona (Bernal in Moreno, 1999, p. 83). These children of Mexican-American war veterans shared their parents zeal for equity and demonstrated it by encouraging 'Chicano' enrollment in universities which had been practically nonexistent. The Civil Rights Act of 1964, the Higher Education Act of 1965, affirmative action, President Johnson's War on Poverty and the funding of bilingual education in 1968 combined to provide some enabling resources and discourse for the equity movement.

Bilingual education was at least partly a product of Chicano activism. English instruction by immersion was the program supported by 'assimilationists' including many Mexican-Americans, even LULAC, but Chicano activists supported bilingual education not only because it offered a program that kept non-English speaking students from falling behind academically as they learned English but also because is validated the identity of the student (Bernal in Moreno, 1999, p. 88). The 1974 decision in *Lau v. Nichols* provided support for those desiring bilingual education by deciding that Title VI of the Civil Rights Act required schools to affirmatively address the English deficiency of students in order not to discriminate based on national origin. As in the case of earlier court decisions, most governmental groups and school boards found ways to ignore or evade the requirements of many of these laws and court decisions through their regulatory powers.

The value of equity was challenged by the value of efficiency in the decades of the 1970s and 1980s. The administrations of Reagan and Bush reduced funding for bilingual education and education in general while also reducing spending for

social projects. The defunding of education occurred along with a discourse of more local control, which had historically been less favorable to minority educational concerns. In response, Hispanics in Colorado, California and Texas challenged their state's educational funding systems in court.

As additional court cases required districts to make a more serious effort to desegregate, alternatives such as tracking and de facto segregation (White flight) increased (Bernal). Proponents of bilingual education and desegregation were in conflict over the compatibility of the two approaches. Bilingual education required the grouping of language speakers, at least part of the time, for instruction in their language while desegregation required the disbursement of minority students. Opponents of bilingual education had a tool that was acceptable to English speaking liberals.

Student activism resurfaced in the 1990s in response to California's rash of seemingly racist legislative initiatives. Students and their supporters boycotted and pursued legal options in response to Proposition 187 to eliminate illegal alien children from the educational system, Proposition 209 to end affirmative action and Proposition 227 to end bilingual education (Bernal). All three of these propositions strike at the ability of Mexican culture students to have access to a quality education and an equal life chance. They are evidence of the dominant culture's blindness to the agenda of business to have access to low cost workers, the cultural deficit approach to nondominant culture students and to the myth of an even playing field.

The Critical Race Model and Democratic Schooling

"Rosa Parks is often portrayed during Black History Month as simply a 'tired, older woman' who wanted to sit down on a bus. But her courageous act on that bus came after months of work on resistance and civil disobedience at the Highlander Folk School (Apple and Beane 1995, p. 4)." An educational system that values the culture and abilities of the individual and trains that individual to participate in nonviolent social change can prepare people for a democratic society. "A major goal of the curriculum should be to help students acquire the knowledge, values, and skills they need to participate in social change so that victimized and excluded ethnic and racial groups can become full participants in their societies. To participate effectively in social change, students must be taught social criticism and must be helped to understand the inconsistency between our ideals and social realities, the work that must be done to close this gap, and how they can, as individuals and groups, become empowered to influence the social and political systems of their societies (Banks 1988, p.165)." Some fear that openly discussing the difference between society's ideals and reality would encourage anarchy. Freire and Dewey believed the contrary to be true. Speaking of the purpose of democratic schooling, Dewey said that society "must have a type of education which gives individuals a personal interest in social relationships and control, and the habits of mind which secure social change without introducing disorder (Dewey 1916, p. 115)." "Democratic educators seek not simply to lessen the harshness of social inequities in school, but to change the conditions that create them (Apple and Beane 1995, p. 11)." Democratic educators create democratic

schools, not by chance, but by creating democratic structures and processes as well as "a curriculum that will give young people democratic experiences (Apple and Beane 1995, p. 9)."

An analysis of the critical theory perspective is important because the problem is not merely a question of cultural dissonance, but it is also a problem of social class dissonance. Paulo Freire and writers using a critical theory framework used words like 'colonization' and 'oppression' that may seem exaggerated to some readers, but if the reader can get past the awkwardness of their feelings about those words, the concepts of critical theory give insight into the experience of schooling for many students, even in democratic countries. Freire argued that the oppressed, although fearful of the freedom of critical consciousness, must show the oppressors the way to the liberation of the educational system (Freire 1970). "The writer has termed the pedagogy of the oppressed, a pedagogy which must be forged with, not for, the oppressed (whether individuals or peoples) in the incessant struggle to regain their humanity (Freire 1970, p. 48)." Schools wishing to eliminate subtractive schooling and to increase their effectiveness with minority groups must learn to listen and value the voice and wisdom of minority members living and working in and with the education of minority children.

One of the saddest outcomes of the school desegregation period was the loss of the programs, traditions and pride of Black Schools. Successful programs, effective teaching practices, close community relationships and valued traditions were

not ‘integrated’ but dropped unceremoniously by the ‘integrated’ school system. The voice and wisdom of the minority group were not valued (Hathaway 1997; Morris and Morris 2000).

Freire observed that the effort of the oppressed to change the educational system occurred in two steps. “In the first, the oppressed unveil the world of oppression and through praxis commit themselves to its transformation. In the second stage, in which the reality of oppression has already been transformed, this pedagogy ceases to belong to the oppressed and becomes a pedagogy of all people in the process of permanent liberation (1970, p. 54).” Minority teachers, students, parents and researchers are working now to create in this society a consciousness of oppression as experienced by many within the educational system. As members of minority groups and the dominant group become conscious, they can join in the transformation of the system. In this process, the educational system becomes a liberating, rather than a colonizing, force.

A significant barrier for members of the dominant group who have become culturally conscious, is dealing with the mythology of minority groups that form part of their self-identity. As cultural consciousness grows, myths such as lack of motivation, lack of intelligence, lack of background knowledge, lack of language and other deficits are revealed and dropped. This process must occur for members of the dominant group to work as collaborators with the oppressed. “It is necessary to trust in the oppressed and in their ability to reason. Whoever lacks this trust will fail to initiate (or will abandon) dialogue, reflection, and communication (Freire 1970, p.

66)."

Oppressive education conquers by objectifying, silencing and manipulating students. Oppression divides and isolates in order to conquer. "First, they narrow the range of school-sponsored knowledge to what we might call 'official' or high-status knowledge that is produced or endorsed by the dominant culture. Second, they silence the voices of those outside the dominant culture, particularly people of color, women, and, of course, the young (Apple and Beane 1995, p. 13)." Oppression manipulates through management and mandates. Oppression assimilates by denying the world-view of the conquered and replaces it with that of the oppressor (Freire p.125). On the other hand, Freire describes liberating education as dialogue instead of silence, unification through cooperation instead of division and organization using delegation instead of manipulation. Oppressors claim authority as their personal right, but Freire located the source of authority in love and reason. From this perspective both teacher and student have authority, and action not based in love or reason is an abuse of authority. Liberating education is social, active, contextual and reflective. Freire described the social nature of learning as involving love for others, humility toward others, faith in others and hope. Liberating education is organized by transformative themes. Freire described these themes as generative because they involve people interacting with a limiting force in the world.

Other Anthropological and Social Theory Models of Education

What is obvious from any political analysis of the accountability movement

that has driven American education for the last two decades is the desire of business to create a schooling system that creates an abundance of qualified, lower-echelon workers. The call for basic skills and a focus on workplace skills cannot mean that business and political interests are interested in changing the social structure (Bourdieu 2000). While educators may not feel uncomfortable with their role in imparting the dominant culture, their role in reproducing the class structure would be if they became conscious of it. Bourdieu later described the method of class reproduction as "an educational system which puts into practice an implicit pedagogic action, requiring initial familiarity with the dominant culture, and which proceeds by imperceptible familiarization, offers information and training which can be received and acquired only by subjects endowed with the system of predispositions that is the condition for the success of the transmission and of the inculcation of the culture (2000, p. 58)." Further, having repeatedly been the recipient of the negative disposition of the schooling system, students may begin to self-eliminate or to relegate themselves to courses and tracks in which they are allowed some dignity or at least fewer humiliations. Unfortunately this may confirm in the minds of culturally unconscious educators the 'correct' procedures of the school.

A Synthesis of the Dominant Mental Model of Education

The elements of the Deficit Model, Standards-Based Approach to closing the achievement gap are well known and in common practice, at least in Texas where the approach has been in formal development for almost two decades. The following elements are the most commonly practiced.

1 Standardized Goals, Curriculum, Instruction, and Assessment

2 Alignment of Curriculum, Instruction, and Assessment

3 Assessment and Remediation

4 Data-Driven Decision Making

5 Accountability: Reporting, Rewards, and Consequences

6 Authority Based Order

7 'Insider Language' that Makes Dialogue Difficult

A Synthesis of the Minority Mental Models of Education

Some sources in this review of the literature have directed themselves only toward theoretical propositions while others have directly or indirectly proposed strategies for closing the achievement gap between dominant culture students and minority students. A synthesis of these strategies taken together forms a practical model. Elements of this model should be evident in schools and districts that have been successful in closing the achievement gap, and similarly their absence should be noted in schools continuing to have achievement gaps. Seven areas that are addressed repeatedly in this body of literature are caring, quality instruction, quality administration, pluralistic curriculum, extracurricular opportunities, guided parent involvement, and dynamic diversity dialogue.

1 Caring

2 Culturally Aligned Curriculum

3 Culturally Aligned Instruction

4 Culturally Aligned Administration/Leadership

5 Culturally Aligned Extracurricular Opportunities

6 Dynamic Parent and Community Involvement

7 Open Dialogue about Barriers to High Achievement

Summary

This chapter has given an overview of the literature on the theory of mental models and the appearance of majority and various minority mental models related to student achievement. The theory of mental models proposed by Craig, developed by Johnson-Laird and Byrne and popularized by Senge may serve as a tool to analyze the processes at work in schools that recreate social difference through academic achievement. African American and Hispanic educators have studied the phenomenon of the achievement gap. Their perspectives are quite different from those of White researchers and the standards-based approach of the educational establishment. This chapter outlined the elements found in the standards approach to closing the achievement gap and the minority approach.

CHAPTER III

Methodology of the Study

Introduction

The relationship of cultural factors and student achievement have been studied for several decades. Research has affirmed the relationship of student achievement to social factors that are related to culture and class such as household income, parents' education, and parents' attitudes toward schooling to name a few. Much research has approached class and cultural differences from an often unstated mental model of 'deficit.' Namely, the conclusion of some research has been that these relationships show a culture of deficit based on dominant culture norms that requires remediation. Other research and some scholarly writing of minority educators recognize differences without assigning deficit. These different approaches may indicate that different mental models are operating in different schools. This study analyzes the presence, composition and impact of mental models in schools.

Purpose of the Study

The purpose of this study was to investigate the presence and nature of mental models in diverse, high-performing elementary schools in Texas. The relationships of the mental models to patterns of equity and achievement in this population were also a focus of this study. Another focus of this study was to investigate the extent to which perceived attention to identified class and cultural factors were related to student achievement and equity.

Research Questions:

1 What are the elements of the mental models of Early HiDEA (High Diversity, Equity, and Achievement), Mature HiDEA and Gap (High Diversity and Achievement, but with significant achievement gaps) Schools?

2 How do the elements within each mental model relate to each other?

3 How do the mental models relate to each other?

Design of the Study

The research design for this study was descriptive. The description focused on characteristics of equity, achievement and the factors associated with achievement in the literature, such as ethnicity and economic status. At the beginning of the study, two groups were investigated, HiDEA and Gap, but as the descriptive data was analyzed, three groups emerged. The HiDEA Group was separated into Early (1 or 2 years of equity) and Mature (3 or more years of equity) HiDEA Groups. The focus groups from which qualitative data were collected were chosen based on the descriptive portion of the study. The use of multiple cases may classify this work as a collective case study because it looks at "a number of cases jointly in order to inquire into the phenomenon, population, or general condition (Stake, 1988)" of diverse, high performing elementary schools in Texas.

The major portion of this study was devoted to thick descriptions and comparisons of the mental models of the teachers in the three groups. These descriptions were used to describe the extent to which a relationship might exist between these mental models, the literature on mental models, the literature on

student achievement and the performance of the schools. Thick description aids the reader in assessing the appropriateness of transferring the experiences of the schools in this study to others. Transferability is one perspective of external validity (Lincoln and Guba, 1985). The mental models of the schools are not only described, but they are also compared. "Comparison is a powerful conceptual mechanism, fixing attention upon the few attributes being compared and obscuring other knowledge about the case (Stake, 1988)." The cases used in this study have much more to offer than the narrow focus of this work. Another use of thick description is to identify the uniqueness of each case that could otherwise be obscured by the comparative nature of parts of this study (Stake, 1988).

Qualitative data was attained by using Interactive Qualitative Research (IQR) methodologies (Northcutt, 2002). This methodology focused on using focus groups, member checks, and pattern matching as the main sources for triangulation. Triangulation, used in qualitative research to establish validity and verification of data, was accomplished by using a variety of data sources and the use of multiple perspectives to interpret a single set of data (Patton, 1990). For this study, the data was collected by conducting focus groups, doing member checks on the meaning developed from the focus groups and from statistical data from the AEIS, the Academic Excellence Indicator System.

Lincoln and Guba assert that "the four terms 'credibility,' 'transferability,' 'dependability,' and 'confirmability' are, then, the naturalist's equivalents for the conventional terms 'internal validity,' 'external validity,' 'reliability, ' and

'objectivity (1985).'" This study meets the requirements of serious research in the following ways. Two of the methods to establish credibility, or internal validity, are triangulation and member checks. In this study, theories found in the literature, characteristics of the population established by the quantitative portion of the study, and the ethnographic data of each of the six focus groups were used for triangulation. Members of each focus group were asked to check and verify the authenticity of the data at each step of the data collection process. Members brainstormed the original data. Then they arranged the data into affinities, or categories and title each affinity. They were asked to describe the nature of each affinity and confirm the appropriateness of the title of each affinity. The members were then asked to decide on the direction of influence between the affinities as a group. A tabular representation of the results was shown to the group members for their verification. A systems influence diagram was generated. This also was shown to group members for their response. The role of thick description in establishing transferability, or external validity, was discussed in the previous paragraph. One method of establishing dependability, or reliability, is the inquiry audit. This method calls for someone other than the researcher to examine the process and the products of the study. The members of the focus groups serve the purpose of inquiry auditors. The members review the process and are allowed to make recommendations for modifying to meet group expectations. The members also check the products at each step of the data collection process to verify that they agree with the participants' perspective of their input. Confirmability, or objectivity, is achieved using a similar

method, the audit trail. The trail includes raw data, data reduction and analysis products, data reconstruction and synthesis products, process notes, materials relating to intentions and dispositions, and instrument development information (Halpern, 1983). The index cards and 'stickies' on which the participants wrote their brainstorm contributions, researcher field notes, and Academic Excellence Indicator System data from the Texas Education Agency serve as the raw data. Tabular results indicate the data reduction and analysis products. The system influence diagram shows the data reconstruction and synthesis product. Notes and written protocols for the data collection process serve to indicate intention and disposition of the researcher. While more could have been done to improve the credibility, transferability, dependability and confirmability of this study, steps were taken to establish these qualities in this work.

Population

Academic Excellence Indicator System records (from 1994 – 2001) were downloaded from the Texas Education Agency website and then imported and disaggregated using Statistical Package for the Social Sciences. The population consisted of 365 elementary schools in Texas. These schools were comprised of different grade combinations but none extended past the sixth grade. All schools in the population had achieved either the Recognized or Exemplary status from the Texas Education Agency in relation to the performance of their students on TAAS. Schools receive Recognized status for achieving 80% of all students and of each subgroup passing the TAAS, and they receive Exemplary status for achieving 90% of

all students and of each subgroup passing the TAAS. In addition none of the schools in the population had more than 67% of any ethnic group. This requirement was used to choose 'diverse' schools. The general population was divided into two initial groups by the equity factor. HiDEA Schools had less than a 5 TLI, Texas Learning Index, point difference between White and minority or economically disadvantaged groups. Gap Schools had at least two differences of 10 TLI points or more. Later in the study, the HiDEA Schools were separated into Early and Mature Schools. Early HiDEA Schools had maintained equitable and high achievement for only one or two years, and Mature HiDEA Schools had maintained equitable and high achievement for three to seven years.

Instrumentation: Interactive Qualitative Analysis

The instrument used was the Interactive Qualitative Analysis developed by Norvel Northcutt. The use of the instrument involved three phases.

Phase One: Developing Research Affinities

The focus groups participated in three processes: a silent nominal group technique, development of affinities, and open and axial coding of the affinities. Each of these is described below:

Silent Nominal Group Technique.

The silent nominal group technique is a method of data collection that is a kind of silent brainstorming of free flow of thought. No discussion was allowed during the process; this cut down the effects of the interjections of others in the group.

It also prevented hierarchical influence with more vocal participants dominating the conversation.

The participants in the focus group were given a broad topic.

> Please think a few moments about the achievement results students in your school have demonstrated. Think about the dimensions and characteristics of those results. Some dimensions would include different groups of students, different subjects, different grade levels, students in different programs (like Bilingual, Special Education or Gifted and Talented), and different socio-economic backgrounds. Now think for a few moments about the system of people, groups, actions, interactions, resources, and intentions that contributed to those achievement results. Now brainstorm as many factors as you can.

Each participant was asked to write one thought about the topic on a post-it note. Each participant generated about eight to ten notes. The notes were then posted on the wall where each participant could view them.

Open Coding and Axial Coding.

Open coding is an inductive method of analysis by which the participants sort and categorize the affinities that are posted without input from the researcher. Axial coding is a method of analysis where the participants refine and narrow the meaning of groups and subgroups and name the affinity groups. After the cards were posted, they were clarified for meaning and then clustered into like categories called affinities. When the group could not reach consensus, multi-voting was used.

Affinities.

Affinities are words or phrases about a common phenomenon, which are related to each other (Northcutt, unpublished). Some are generated by inductive analysis, using open-ended coding in response to a broad, open-ended topic or

question during a focus group. These are refined during deductive analysis, by the group under study, using axial coding. The Affinities are homogeneous in character, are unambiguous and are independent with very little conceptual overlap. Variation, which represents considerable deviation, is treated as an outlier.

As all members participated in the open coding at the same time, each person moved the Affinity cards into groups according to individual perceptions. During axial coding, the researcher acted as facilitator while the participants clarified and refined meanings. The Affinity clusters represented a socially constructed consensus of meaning, a shared mental model. The literature on mental models suggested that the participating teachers carried the imprint of the school wide mental model. The brainstorming activity allowed for individual differences in the mental modeling to appear, but the group processes of open, axial and theoretical coding guided the data toward a close approximation of the school wide mental model.

Phase Two: Developing the Affinity Relationships

In this phase, theoretical coding was established using the tabular Interrelationship Diagraph (IRD) and the Systems Influence Diagram (SID) – a path diagram designed to determine the interrelatedness of the Affinities. The process of theoretical coding was completed by the participants, making it different from traditional qualitative research methodologies. The direction of influence was noted by arrows going into the affinity (Affinity **a** was influenced by Affinity **b**) or out of it (Affinity **b** was influenced by Affinity **a**). The number of ins and outs was calculated

and the differences determined and noted as delta. The table was reordered in descending order.

The Affinities were classified into drivers (which influenced other Affinities) and outcomes (which are influenced). They were further categorized as primary (not influenced by others or does not influence others), secondary or mediating (more influence or being influenced), or pivots (those which have a delta = 0).

The Interrelationship Diagraph was used to build the Systems Influence Diagram. This graphic representation showed the relationship of each of the Affinities. Arrows pointed to the Affinity being influenced. The diagram is read from left to right. Those arrows pointing to the left demonstrated recursions (Northcutt, et. al, 1998). Patterns of influence were also noted as feedback loops with three or more Affinities developing a circle pattern of influence.

Phase Three: Member Check

In the last phase, members were emailed the IRD and SID products generated from their data and analysis and asked to verify for accuracy in representation of their input and analysis. The members also were asked if the schematic representation of the mental model of their school was true, perceived by them to be accurate.

The Limitations

This study focused on shared mental models of teachers in diverse, high-performing schools. The literature on mental models suggested that this shared mental model was carried by group members like so many intersecting Venn Diagrams. The task demands on teachers and the backgrounds of the teachers in each

school could produce different relationships to the shared mental model by the teachers. For example, if the school divided teacher work into highly specialized activities with no formal or informal communication, the individual mental models of the teachers could be more independent and have less shared material. The focus groups consisted of three to eight teachers chosen in some cases by the principal and self selected through voluntary enrollment in others. Focus groups of more or different teachers could have generated a different mental model, or more likely, identified different factors or relationships.

In addition, the schools were chosen based on data from 2001. The focus group sessions occurred in May and June of 2002. The statewide testing scores had been reported by the time the focus groups met so the scores and relationships of 2002 were fresh in their minds. There could have been some fluctuation in group characteristics during the year. In other words, a Gap School in 2001 may have become an Early HiDEA School in 2002, or vice-versa. Schools that were in the Early HiDEA group in 2001 may have moved to the Mature HiDEA group in 2002 by demonstrating equity and high achievement for a third year. Therefore the quantitative data and the qualitative data form the IQA process show snapshots of the participating schools at two different points in time separated by about one year.

Notwithstanding these limitations, the literature on mental models suggested that even one member of a group has most of the shared mental model as part of their own. Even an analysis of individual mental models would have validity given this characteristic of shared mental models. The involvement of several members of the

school team combined with the power of the group process worked together to produce a shared mental model that the teachers believed accurately represented the functioning of their schools.

Data Collection Procedures

Much of the preliminary selection of the population was completed by the researcher early in the study through the use of descriptive measures. As has been mentioned, the descriptive data came from the Academic Excellence Indicator System of the Texas Education Agency.

The qualitative data was collected from groups of teachers in six different schools, two from each of the three groups in the study, Gap, Early HiDEA and Mature HiDEA. The six different schools were from three different school districts in two different geographical areas of the state. Urban, suburban and rural communities were represented in the schools chosen for participation in the study. The qualitative data was collected using the Interactive Qualitative Research Method already described during the months of May and June of 2002. The focus group sessions took from one and a half to two and half hours depending on the size and nature of the group.

Data Analysis Procedures

Statistical analysis of the data collected from the Academic Excellence Indicator System was completed using the Statistical Package for Social Sciences (SPSS, version 9.0).

The purpose of qualitative inquiry is to produce findings that then lead to theory (Patton, 1990). The data from the qualitative portion of the study was analyzed in several ways. The next part of the data analysis presented in Chapter IV of this study had been completed in the data collection portion of the study. Interactive Qualitative Research methodology allowed participants to become involved in determining the themes that emerged.

Guba (1978) suggested that in focusing the analysis of qualitative data an evaluator must first deal with the problem of convergence. The problem of convergence is figuring out what things fit together. For this study, field notes and documents were coded according to emergent themes (Affinities) using a classification system that was borne out of the focus groups held with participants.

They were evaluated for trustworthiness, credibility, transferability, and consistency by using a member check on each theme. Participants were asked to verify the results and emergent themes for accuracy.

Summary

The methodology and procedures for the study were presented in this chapter. This study was comprised of both quantitative and qualitative methodologies. The selection of the population for study was described, as was a discussion of the instrumentation to be used. The data collection and analysis processes were also described in order to give the reader a perspective on the nature of the study.

CHAPTER IV

Findings and Data Analysis

Introduction

The findings and analysis in this chapter will include both descriptive and qualitative methods. Statistical information will be used to describe the general population and the schools furnishing focus groups for the study in regard to general demographic information as well as equity and achievement information. The qualitative findings will be those produced through the IQA process.

Population Characteristics

The descriptive portion of the study also builds a portrait of the population from which the case study schools were chosen. Several variables were chosen because of their significance in student achievement literature including ethnicity, economic status, and mobility. Since equity has been assumed to be strongly and significantly related to achievement, it has not developed a theoretical structure of its own. However, some variables related to equity in the literature were also chosen including instructional spending, experience of teachers, participation in certain programs and class size.

VARIABLES USED IN THIS PART OF THE STUDY

- The ethnicity of the largest student group in the school
- The percentage of economically disadvantaged
- The percentage of mobility of students taking the TAAS
- The percentage of students not tested
- The percentage of minority teachers
- The percentage of teachers with 5 or fewer years of experience

- The amount of instructional of dollars spent per pupil
- The student to teacher ratio
- The percentage of students in the Special Education program
- The percentage of students in the Gifted and Talented program
- The relation of the percentage of retentions compared to the state average, 1 for over the state average, and –1 for under the state average
- The number of years the school has achieved equity, no gap of 5 TLI points
- The percentage of grades achieving equity
- The average gap, the average difference between the TLI scores of White and minority or economically disadvantaged students
- The percentage of general mobility
- The percentage of students passing all tests, TAAS Reading, Writing and Math

Table 1

Frequency of Ethnicity and Retention in Population and Subgroups										
	All Schools		Gap Schools		HiDEA Schools		Early HiDEA Schools		Mature HiDEA Schools	
Group	No.	%	No.	%	No.	%	No.	%	No.	%
African American	28	7.7	14	6.6	14	9.1	11	8	3	17.6
Hispanic	132	36.2	75	35.5	57	37	51	37.2	6	35.3
White	205	56.2	122	57.8	83	53.9	75	54.7	8	47.1
Total	365	100	211	100	154	100	137	100	17	200
Retained less than state average	227	62.2	139	65.9	88	57.1	79	57.7	9	52.9
Retained the state average	5	1.4	4	1.9	1	0.6	1	0.7	0	0
Retained more than state average	133	36.4	68	32.2	65	42.2	57	41.6	8	47.1
Total	365	100	211	100	154	100	137	100	17	100

*Number and percentage of the ethnicity of the largest demographic group

The population can be seen as three groups, those that have not achieved equity (Gap Schools), those that have achieved equity for a year or two (Early HiDEA Schools, and those that have maintained equitable performance for three

years or more (Mature HiDEA Schools). These groups vary in interesting ways. HiDEA Schools were more likely to have a minority group as the largest demographic group in the school population. In particular, Mature HiDEA Schools were more likely to have an African American group as the largest sub population. HiDEA Schools were also more likely to retain more than the state average of students in the same grade.

Table 2

Means and Standard Deviations of Factors Related to Equity and Achievement in Diverse, High Performing Schools, Gap Schools and HiDEA Schools

	Diverse, High Performing Schools		Gap Schools		HiDEA Schools	
Factors	Mean	S.D.	Mean	S.D.	Mean	S.D.
% Eco. Dis.	52.7205	21.3311	48.9858	19.1606	57.8377	23.0874
% TAAS Mobility	5.1370	2.5045	5.1469	2.5114	5.1234	2.5031
% Students not Tested	2.6384	2.6531	2.9100	2.8278	2.2662	2.3516
% Minority Teachers	16.3205	16.0548	15.0853	12.3158	18.0130	20.0013
% Inexperienced Teachers	31.7123	13.6050	30.9431	12.7255	32.7662	14.7022
Instructional Spending per Pupil	3463.10	645.75	3411.54	535.81	3533.75	767.69
Student/Teacher Ratio	14.6986	2.3151	14.7678	2.0904	14.6039	2.5957
% Students in Special Ed.	12.3479	4.2169	11.8863	3.7323	12.9805	4.7423
% Students in Gifted	5.8110	6.2538	6.2559	7.1641	5.2013	4.6854
# Years of Equity	.6575	1.0166	0	0	1.5584	1.0225
% of Grades with No Gap	37.2164	36.1808	14.62256	21.3474	68.1688	28.6484
Average Gap	-8.1660	8.3627	-14.2929	4.6489	.2286	3.7443
% Mobility	19.9644	6.9116	19.7867	7.2188	20.2078	6.4824
% Students Passing All Tests	87.5238	5.6952	85.8455	4.2545	89.8234	6.5663
N	365	365	211	211	154	154

HiDEA Schools have an average of 58% economically disadvantaged students

compared to an average of 49% for Gap Schools. This is the first interesting characteristic distinguishing the two groups. The literature suggests that poorer schools demonstrate lower academic performance. HiDEA Schools are also more likely to have a higher percentage of minority teachers (18% to 15%), more inexperienced teachers (33% to 31%), to spend more money per pupil on instruction ($3534 to $3412), to have more students in Special Education (13.0% to 11.9%), to have fewer students in the Gifted program (5.2% to 6.2%), to retain fewer students, to demonstrate equity across more grade levels, to demonstrate a reverse gap (minority students scoring better than White students), and to have more students passing all tests (90.0% to 85.9%). Interestingly, both groups had at least one school that had 100% of its students pass all tests. Not one student of any ethnicity or economic group failed any of the TAAS tests. Apparently, 'all children can perform at high levels' is not just a slogan. It has been achieved in diverse elementary schools. This was not achieved by keeping students from testing. The percentage of students not tested in HiDEA Schools was 2.2662 compared to 2.9100 in Gap Schools.

In addition to describing the characteristics of the Gap and HiDEA School populations, a description was also done of the characteristics of the two kinds of HiDEA Schools, Early HiDEA Schools that had demonstrated equity for one or two years, and Mature HiDEA Schools that had demonstrated equity for three or more

Table 3

Means and Standard Deviations of Factors Related to Equity and Achievement in HiDEA, Early HiDEA and Mature HiDEA Schools						
	HiDEA Schools		Early HiDEA Schools		Mature HiDEA Schools	
Factor	Mean	S.D.	Mean	S.D.	Mean	S.D.
% Eco. Dis.	57.8377	23.0874	57.8377	23.0874	56.3529	22.8690
% TAAS Mobility	5.1234	2.5031	5.1234	2.5031	5.3529	3.0607
% Students not Tested	2.2662	2.3516	2.2662	2.3516	2.5882	2.8076
% Minority Teachers	18.0130	20.0013	18.0130	20.0013	20.8824	22.5025
% Inexperienced Teachers	32.7662	14.7022	32.7662	14.7022	30.9412	15.8369
Instructional Spending per Pupil	3533.75	767.69	3523.55	792.02	3615.94	543.57
Student/Teacher Ratio	14.6039	2.5957	14.6715	2.5150	14.0588	3.2107
% Students in Special Ed.	12.9805	4.7423	12.9805	4.7423	13.1176	5.5777
% Students in Gifted	5.2013	4.6854	5.2013	4.6854	7.2941	5.4287
# Years of Equity	1.5584	1.0225	1.2555	.4377	4.0000	1.180
% of Grades with No Gap	68.1688	28.6484	68.1688	28.6484	62.0000	23.6907
Average Gap	.2286	3.7443	.2286	3.7443	.3176	3.0918
% Mobility	20.2078	6.4824	20.2078	6.4824	19.8235	7.7398
% Students Passing All Tests	89.8234	6.5663	89.8234	6.5663	94.0941	5.6144
N	154	154	137	137	17	17

years. One of the problems of grouping and averaging is the loss of details and uniqueness in the individual or small group of cases. The division of the HiDEA Schools into two groups for closer study was an attempt to recover some of the detail and uniqueness offered by schools that have seen excellent performance by diverse

students.

Mature HiDEA Schools were more likely to have a higher percentage of minority teachers, to have slightly fewer inexperienced teachers, to spend more for instruction, to have more students in the Gifted program, to have a reverse achievement gap, and to have higher overall achievement.

Clearly, an equitable environment was the greatest difference between equitable schools and schools with significant achievement gaps between White and minority students. (This is not circular reasoning, although it may appear so at the surface.) The data showed that the equity found in these schools was not the product of excellence in one particular subject, one segment of teachers or one particular grade, but that it was a school-wide ethos. Many factors could have been at work to produce this effect. A common vision, a common philosophy, a powerful set of strategies that were effective for all students, parent and community support, or leadership focused on equity and excellence could have been the driving factors.

The descriptive study of the HiDEA Schools suggested even more strongly than that done in the larger population of diverse, high achieving elementary schools that not only did the typical characteristics suggested as predictors in the literature on the achievement of minority and poor students not appear as strong predictors, but in some cases even ran contrary to the evidence produced in other research (as with the ethnicity of the largest group).

Table 4

Comparison of Means of Groups in the Study with the State					
	State	Gap	HiDEA	Early HiDEA	Mature HiDEA
% Eco. Dis.	49	49	58	58	56
%TAAS Mobility	4.8	5.15	5.12	5.09	5.35
% Not Tested	3.8	2.91	2.27	2.23	2.59
% Minority Teachers	26	15	18	18	21
%Inexperienced Teachers	35	31	33	33	31
Instr. $/Pupil	3500	3412	3534	3524	3616
S/T Ratio	14.8	14.8	14.6	14.7	14.1
% in Sp. Ed.	11.9	12	13.0	13.0	13.1
% in Gifted	8.4	6.3	5.2	4.9	7.3
Years of Equity	0	0	1 to 7	1 to 2	3 to 7
% Grades with Equity	0	15	68	69	62
Average Gap	-15.5	-14	.23	.22	.32
% Mobility	Not Available	20	20	20	20
%Pass All Tests	83	86	90	89	94

*Ethnicity and Retention were left out of this table.

Table 4 suggested that the higher achievement of Gap Schools compared to the state average was related to the higher probability of the school having a White majority student population, more White teachers, fewer inexperienced teachers and lower retention. Gap Schools did not differ much from the state average in any of the three measures of equity. The comparison suggested that Gap Schools attained their high achieving status using strategies that were less effective for minority students.

Table 4 also suggested that the HiDEA Schools, especially the Mature HiDEA Schools, were more likely to be representative of the state average relating to

the largest ethnic group of students comprising the student population and percentage of minority teachers. The HiDEA Schools had higher percentages of economically disadvantaged students. Table 19 suggested that the more equitable schools had a school environment with a stronger minority influence, both from students (and possibly their parents) and teachers. This stronger minority influence could have influenced the mental model of the school; causing it to be less deficit oriented and more oriented toward student characteristics.

While some individual schools in both populations had percentages of economically disadvantaged students in the 90s with simultaneously high achievement, and while HiDEA Schools clearly had higher percentages of economically disadvantaged students and higher achievement, the general trend between these two variables agreed with the literature. The Mature HiDEA group was the most interesting group in that it not only had the highest equity, but it also had the highest achievement. The group was comprised of schools from varying socio-economic brackets and had a variety of ethnic majority groups among them. Mature HiDEA Schools broke the mold of achieving equity at the expense of high achievement. Not much in the descriptive data indicated how they did it, however.

Focus Groups

Two schools from each group were chosen for further study to answer the second, third and fourth research questions pertaining to mental models and equitable

achievement. The schools were from three different school districts, representing urban, suburban and rural communities and two geographical regions of the state.

Gap School #1 was from a semi-rural 4A district close to a major urban city. The drive to the district goes through open fields with crops and cattle. School was out for the summer when the focus group was held, and a minor construction project was going on at the school. The principal was cordial and helped set up the meeting. The principal also helped by choosing teachers from the foundational grades and the tested grades. She also included a specialist that worked with all grades. The group consisted of four teachers.

Gap School #2 was a suburban school in a major urban school district. The principal made up for being difficult to find by offering an incentive for teachers to participate. This group was composed of eleven teachers of grades Prekinder through fourth. The focus group was held one day after summer school hours had ended.

Early HiDEA School #1 was a suburban school in a suburban school district. . The principal said that specialists work on academic self esteem the first six weeks and academic acceleration after that. The principal also said that this style of pullout program had almost eliminated discipline problems. Students wore uniforms. The principal met with the teachers that met with me before he let me meet with them. The teachers seemed to be comfortable working with each other. There was a respect for the principal's mission and their own efficacy. The facilities were in good shape, clean. Students walked in lines, reasonably in order without military feeling. Parents were seen in the building. The school was located on a spacious campus with the

middle school. The principal said not one student failed any test. 100% of the students passed. The key quote from this group was, "Our attitudes drive everything and our attitudes are driven by our administration." The principal let me meet with six of the academic specialists.

Early HiDEA School #2 was an urban school in a major urban school district. After having great difficulty securing teachers for the IQA, too many volunteered at meeting time. After some negotiation, we ended up with five 2nd through 5th grade teachers. There seemed to be less clarity among the teachers about the system that produced the results in their school as well as less clarity as to the nature of their achievement profile. Teachers asserted that they modified and innovated as their experience, strengths, and the needs of the students indicated. Teachers were required to make home visits to ensure communication with parents. The teachers mentioned that the 5th grade used an organization emphasizing team teaching. The school held DEAR twice a day. Teachers expressed that the school was family oriented. The community was like a small town. People and teachers stay long enough for teachers to know younger siblings. Teachers keep with former students. Teachers noted that some student behavior and the lack of parental involvement of non Hispanic parents were problems.

Mature HiDEA School #1 was an urban school in a major urban school district. The school was composed of multiply handicapped, deaf and gifted students. The school was founded based on the research that suggested that gifted students can,

and need to, empathize with other children with special needs. The setting of the school was affluent, modern, and well equipped. Six teachers of all three populations were part of the focus group.

Mature HiDEA School #2 was also an urban school in a major urban school district. A key quote from this group was, "We have no choice." Two kindergarten, one second grade and one fifth grade teacher participated in the IQA. The kinder teachers had 15 or more years of experience while the other two teachers had three years experience. The principal arranged for the meeting between the researcher and the teachers in a forced manner, and maintained more than the expected social distance from the researcher. The campus not only had locked side doors, but a locked front door that visitors were 'buzzed through.' High fences encircle a spacious campus, well appointed and well groomed inside and out. This campus was in an economically depressed area of a major urban city.

Focus Groups' Axial and Theoretical Coding

Each focus group brainstormed in response to the following prompt.

> Please think a few moments about the achievement results students in your school have demonstrated. Think about the dimensions and characteristics of those results. Some dimensions would include different groups of students, different subjects, different grade levels, students in different programs (like Bilingual, Special Education or Gifted and Talented), and different socio-economic Backgrounds. Now think for a few moments about the system of people, groups, actions, interactions, resources, and intentions that contributed to those achievement results. Now brainstorm as many factors as you can.

After the group finished contributing their data in response to the prompt, they were asked to group the data into categories, or Affinities. After the factors were grouped

into Affinities, the group would explain to the researcher the reasons for grouping the factors. The group also named the Affinity. The following are the Lists of Affinities given by each focus group. Each list includes the name of the Affinity, its identifying number, its role in the Interrelational Diagram, and the Delta of each Affinity (the difference between the number of influence arrows out and in. A positive Delta indicates more influence arrows going out than coming into the Affinity. A primary driver has all, or almost all influence arrows moving out. A secondary driver has more arrows moving out than coming in. A pivot has about an equal number of influence arrows moving out as coming in. A primary outcome has all, or almost all, influence arrows coming in. A secondary outcome has most of the influence arrows coming in. Before each List of Affinities there will be a description of the Affinities and an Interrelational Diagram Table, or IRD.

Gap School #1.

Table 5

Comparison of State and Group Means with Gap School #1 Characteristics			
	State	Gap	**Gap School #1**
% Eco. Dis.	49	49	**71**
%TAAS Mobility	4.8	5.15	**10**
% Not Tested	3.8	2.91	**1**
% Minority Teachers	26	15	**7**
%Inexperienced Teachers	35	31	**39**
Instr. $/Pupil	3500	3412	**3449**
S/T Ratio	14.8	14.8	**14**
% in Sp. Ed.	11.9	12	**14**
% in Gifted	8.4	6.3	**1**
Years of Equity	0	0	**0**
% Grades with Equity	0	15	**50**
Average Gap	-15.5	-14	**-10.20**
% Mobility	Not Available	20	**31**
%Pass All Tests	83	86	**87.20**

Gap School #1 barely qualified as a Gap School because its average gap was just a little over 10 TLI points. Its higher percentage of economically disadvantaged, higher percentage of grades with equity, and higher percentage of students passing all tests indicate that it may be on its way to being an HiDEA School soon.

AFFINITIES

Homework (1) – Homework was a one factor Affinity that was considered important enough to be on its own.

Rewards/Motivation (2) – Students are rewarded for proper behavior and achievement.

Parental Involvement (3) – The teachers indicated that this Affinity referred to communication of parents with teachers, and on the basis of communication with the

teachers, involvement with students around themes of motivation, behavior and homework.

Disaggregation of Data (4) – This Affinity referred to the school's testing program which was used to monitor student progress and inform instruction.

Vertical Alignment (5) – This Affinity alludes to the school's effort at sharing goals, discussing student needs, curriculum and instructional issues across grade levels.

Collegial Support (6) – Teachers cooperate by sharing successful teaching practices.

Special Programs (7) – This Affinity includes ESL, Special Education, Dyslexia, summer school, and special reading programs.

Staff Development (8) – Staff development meets the needs of teachers, is high quality, and is TEKS focused.

Early Preparation (9) – This refers to academic press in early grades. Students' academic progress is monitored in early grades and interventions are implemented to keep students working at the expected grade level.

Tutorials (10) – The tutorial strategy in this school includes peer tutoring, individual and small group tutoring, tutoring after school, tutoring during lunch, tutoring during class, and tutoring on Saturday.

High Expectations (11) – This Affinity was simply put and not elaborated.

Quality Teachers (12) – Quality teachers have many years of experience.

Continuity (13) – This refers to the consistency and continuity of the academic focus and process of monitoring and intervention throughout the organization.

Administration (14) – This Affinity signified that the administration influenced the work of the teachers, the involvement of parents, and the focus of students. The administration was seen as supportive.

Grouping (15) – This refers to flexible grouping according to student need for mastery of curriculum objectives.

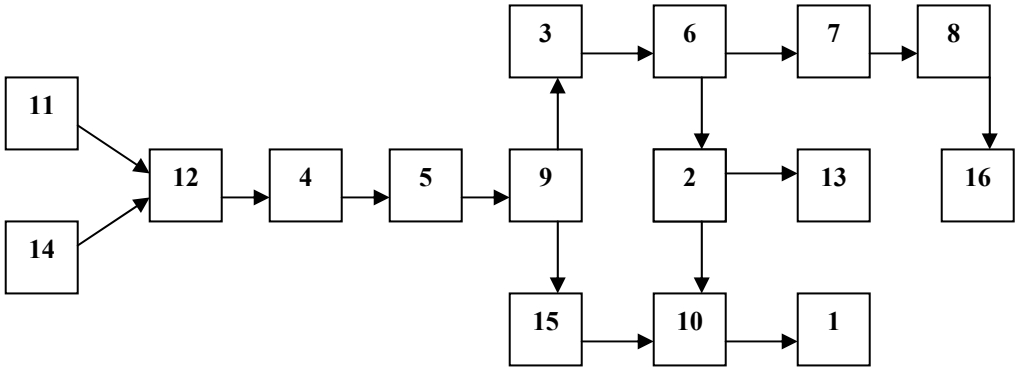
Interdisciplinary Integration (16)– This Affinity simply meant that the TAAS testing format was used across the curriculum to give students familiarity with the format and testing strategies.

Table 6 IRD Gap School #1																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	In	Out	^
1	X	<	-	-	-	<	-	-	^	<	<	-	<	<	-	<	7	1	-6
2	^	X	^	-	-	<	^	-	^	^	-	-	^	<	-	-	2	6	4
3	-	<	X	<	-	^	^	-	<	^	<	<	<	<	-	-	9	3	-6
4	-	-	^	X	^	^	^	^	^	^	<	<	^	-	^	^	2	10	8
5	-	-	-	<	X	^	^	^	^	^	<	-	-	<	-	^	3	6	3
6	^	^	<	<	<	X	^	<	<	^	-	-	<	<	<	<	9	4	-5
7	-	<	<	<	<	<	X	^	<	-	<	<	-	<	<	^	10	2	-8
8	-	-	-	<	<	^	<	X	<	-	<	-	^	<	-	^	6	3	3
9	<	<	^	<	<	^	^	^	x	^	<	<	<	<	^	^	8	7	-1
10	^	<	<	<	<	<	-	-	<	x	<	<	<	<	<	-	11	1	-10
11	^	-	^	^	^	-	^	^	^	^	x	^	^	-	^	^	0	12	12
12	-	-	^	^	-	-	^	-	^	^	<	X	^	<	^	^	2	8	6
13	^	<	^	<	-	^	-	<	^	^	<	<	X	<	-	-	6	5	-1
14	^	^	^	-	^	^	^	^	^	^	-	^	^	x	^	^	0	13	13
15	-	-	-	<	-	^	^	-	<	^	<	<	-	<	X	^	5	4	-1
16	^	-	-	<	<	^	<	<	<	-	<	<	-	<	<	X	9	2	-7

Table 7
List of Affinities for Gap School #1

#	AFFINITY	ROLE	Delta
14	Administration	Primary Driver	13
11	High Expectations	Primary Driver	12
4	Disaggregation of Data	Secondary Driver	8
12	Quality Teachers	Secondary Driver	6
2	Reward/Motivation	Secondary Driver	4
5	Vertical Alignment	Secondary Driver	3
8	Staff Development	Secondary Driver	3
9	Early Student Preparation	Pivot	-1
13	Continuity	Pivot	-1
15	Grouping	Pivot	-1
6	Collegial Support	Secondary Outcome	-5
1	Homework	Secondary Outcome	-6
3	Parental Involvement	Secondary Outcome	-6
16	Interdisciplinary Integration	Secondary Outcome	-7
7	Special Programs	Secondary Outcome	-8
10	Tutorials	Primary Outcome	-10

Figure 1
System Influence Diagram (SID) for Gap School #1



Gap School #2.

Table 8

Comparison of State and Group Means with Gap School #2 Characteristics			
	State	Gap	**Gap School #2**
% Eco. Dis.	49	49	**72**
%TAAS Mobility	4.8	5.15	**3**
% Not Tested	3.8	2.91	**1**
% Minority Teachers	26	15	**59**
%Inexperienced Teachers	35	31	**32**
Instr. $/Pupil	3500	3412	**2801**
S/T Ratio	14.8	14.8	**19**
% in Sp. Ed.	11.9	12	**7**
% in Gifted	8.4	6.3	**11**
Years of Equity	0	0	**0**
% Grades with Equity	0	15	**0**
Average Gap	-15.5	-14	**-10.60**
% Mobility	Not Available	20	**15**
%Pass All Tests	83	86	**81.80**

"I think it's the intangibles." Although Gap School #2 has a higher percentage of economically disadvantaged, a higher percentage of minority teachers,

a higher student/teacher ratio, a higher percentage in the Gifted program and a lower instructional spending level than the average Gap School, its equity and achievement profile indicate it is strongly representative of this group.

AFFINITIES

Staff (1) – The concept of the staff was dedicated, hard-working, quality, knowledgeable and committed.

Parent Involvement (2) – This Affinity was thought of as general parental support, parental involvement in homework assignments, attending conferences and being a good role model.

Good Communication (3) – Good communication was defined as involving teachers, parents and the community, giving written notices of student progress to parents, collaboration between teachers, keeping confidentiality.

Flexibility of Team Teaching (4) – This Affinity was one of the more elaborated ones. In this concept, teachers included giving students a strong foundation in the lower grades, a lot of planning by departments, grades and across grade levels, responsibility, mentoring between teachers, using a variety of instructional resources, using a variety of instructional methods, and grouping students by need or program.

Following the District Curriculum (5) – This concept included teaching 'learning strategies,' frequent staff development, great reading program such as Accelerated Reading (?), modification, immediate intervention, using research based teaching strategies, using small group instruction, having training led by 'lead teachers,' great bilingual program, great resources, structured on the state curriculum, and focus on district objectives in every grade.

School Climate (6) – The Affinity included caring for others, good attendance, self esteem, friendship, respect, students wanting to learn, hard working students, high expectations for the students and making learning fun.

Extra Programs (7) – By extra programs, the group meant after school and Saturday tutorials, and early reading intervention.

Administration (8) – The administration of this school gave support with discipline and instruction, got rid of 'dead weight,' demonstrated compassionate leadership, led

school improvement, organized, managed, and pressured students, parents and teachers to achieve.

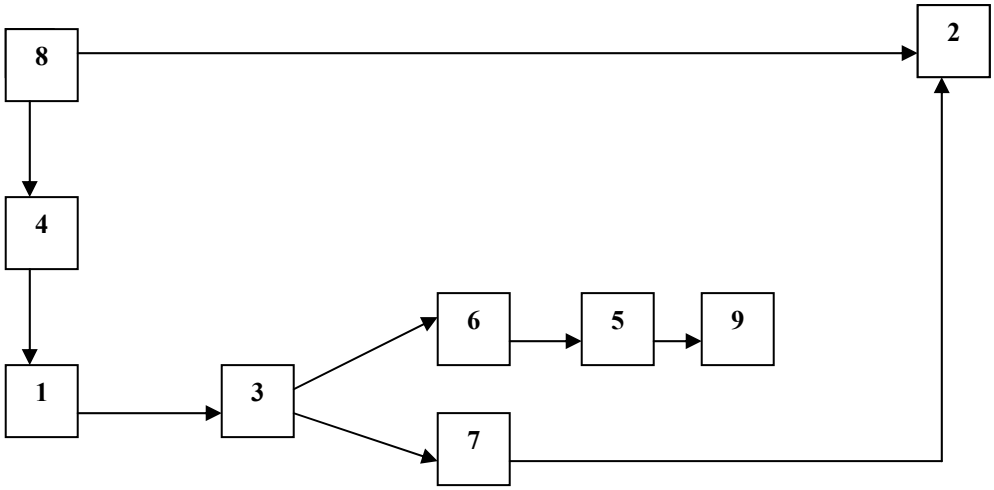
Availability of Technology (9) – While this factor was strong enough to be an Affinity, it was an unelaborated category.

Table 9 IRD Gap School #2												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**OUT**	**IN**	**^**
1	**X**	^	^	<	<	^	^	<	-	**4**	**3**	**1**
2	<	**X**	<	<	<	<	<	<	-	**0**	**7**	**-7**
3	<	^	**X**	^	<	^	^	-	-	**4**	**2**	**2**
4	^	^	<	**X**	<	<	^	<	-	**3**	**4**	**-1**
5	^	^	^	^	**X**	<	^	<	^	**6**	**2**	**4**
6	<	^	<	^	^	**X**	^	^	-	**5**	**2**	**3**
7	<	^	<	<	<	<	**X**	<	-	**1**	**6**	**-5**
8	^	^	-	^	^	<	^	**X**	^	**6**	**1**	**5**
9	-	-	-	-	<	-	-	<	**X**	**0**	**2**	**-2**

Table 10
List of Affinities for Gap School #2

#	**Affinity**	**Role**	**Delta**
8	Administration	Primary Driver	5
5	District Curriculum	Primary Driver	4
6	School Climate	Secondary Driver	3
3	Communication	Secondary Driver	2
1	Staff	Pivot	1
4	Team Teaching	Pivot	-1
9	Availability of Technology	Primary Outcome	-2
7	Extra Programs	Primary Outcome	-5
2	Parent Involvement	Primary Outcome	-7

Figure 2
System Influence Diagram (SID) for Gap School #2



Early HiDEA School #1.

Table 11

Comparison of State and Group Means with Early HiDEA School #1 Characteristics			
	State	HiDEA	**Early HiDEA School #1**
% Eco. Dis.	49	58	**96**
%TAAS Mobility	4.8	5.12	**3**
% Not Tested	3.8	2.27	**7**
% Minority Teachers	26	18	**65**
%Inexperienced Teachers	35	33	**33**
Instr. $/Pupil	3500	3534	**3045**
S/T Ratio	14.8	14.6	**19**
% in Sp. Ed.	11.9	13.0	**3**
% in Gifted	8.4	5.2	**7**
Years of Equity	0	1 to 7	**1**
% Grades with Equity	0	68	**100**
Average Gap	-15.5	.23	**-1.90**
% Mobility	Not Available	20	**21**
%Pass All Tests	83	90	**94.30**

Early HiDEA School #1 has a higher percentage of economically disadvantaged, a higher percentage of minority teachers, a higher student/teacher ratio and a lower instructional spending level than the average HiDEA School, but its equity and achievement profile are representative of HiDEA group.

AFFINITIES:

1 Attitudes/Relationships

2 Curriculum: Provided by district, modified by campus specialists, lesson plans given to teachers

3 Special Education Program/Population: refers to program and needs of the students

4 ESL/Bil/ED Population/Programs: refers to the programs and the needs of the students

5 Materials: developed by campus specialists

6 Tutoring: after school

7 Assessment: preassessment given in the first 10 days on grade level, 5 year old release test, then every 5 weeks a newer released test is given

8 Early Reading Intervention

9 Data Analysis/Decision-Making: a team (specialist, principal, classroom teacher, counselor, other) discusses the progress and interventions for students that are not successful

10 More Personnel/Effective Use of Personnel: staff members believe they have more staff and make effective use of their personnel, the pullout, curriculum modification, material development and early reading intervention programs are examples

11 Principal/Administration: teachers believe the principal sets the tone, focuses everyone on achievement, individualizes interventions, requires and promotes relationship, accepts no excuses

12 Pullout Program: students are pulled out for work with a specialist with up to three students from the subject they will study with the specialist

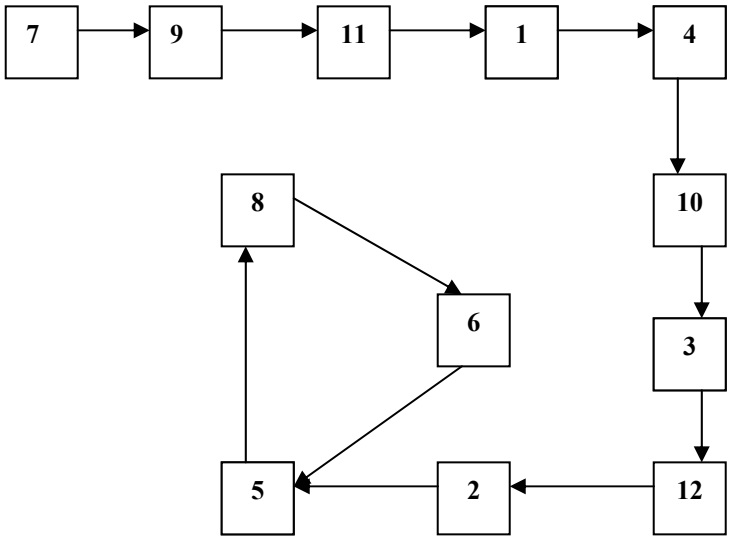
Other: although not listed as a factor, the teachers team teach, specializing in either reading or math and teaching that subject all day

Table 12 IRD Early HiDEA School #1															
	1	2	3	4	5	6	7	8	9	10	11	12	OUT	IN	^
1	X	-	<	^	_	^	-	^	-	^	<	^	5	2	3
2	-	X	-	<	^	<	<	^	<	<	<	<	2	7	-5
3	^	-	X	-	-	-	<	<	<	<	<	^	2	5	-3
4	<	^	-	X	^	^	<	^	<	^	<	^	6	4	2
5	-	<	-	<	X	<	<	^	^	^	^	^	1	8	-7
6	<	^	-	<	^	X	<	<	<	<	<	<	2	8	-6
7	-	^	^	^	^	^	X	^	^	^	<	^	9	1	-8
8	<	<	^	<	<	^	<	X	<	^	<	^	4	7	-3
9	-	^	^	^	^	^	<	^	X	^	^	^	9	1	8
10	<	^	^	<	^	^	<	<	<	X	<	^	5	6	-1
11	^	^	^	^	^	^	^	^	<	^	X	^	10	1	9
12	<	^	<	<	^	^	<	<	<	<	<	X	3	8	-5

Table 13
List of Affinities for Early HiDEA School #1

#	**Affinity**	**Role**	**Delta**
11	Principal/Administration	Primary Driver	9
9	Data Analysis/Decision-Making	Primary Driver	8
7	Assessment	Primary Driver	8
1	Attitudes/Relationships	Secondary Driver	3
4	ESL/Bil/ED Population/Program	Secondary Driver	2
10	More Personnel/Effective Personnel	Pivot	-1
3	Special Education Program/Population	Secondary Outcome	-3
8	Early Reading Interventions	Secondary Outcome	-3
2	Curriculum	Primary Outcome	-5
12	Pullout Program	Primary Outcome	-5
6	Tutoring	Primary Outcome	-6
5	Materials	Primary Outcome	-7

Figure 3
System Influence Diagram (SID) for Early HiDEA School #1



Early HiDEA School #2.

Table 14

Comparison of State and Group Means with Early HiDEA School #2 Characteristics			
	State	HiDEA	**Early HiDEA School #2**
% Eco. Dis.	49	58	**96**
%TAAS Mobility	4.8	5.12	**14**
% Not Tested	3.8	2.27	**2**
% Minority Teachers	26	18	**88**
%Inexperienced Teachers	35	33	**32**
Instr. $/Pupil	3500	3534	**2598**
S/T Ratio	14.8	14.6	**25**
% in Sp. Ed.	11.9	13.0	**8**
% in Gifted	8.4	5.2	**0**
Years of Equity	0	1 to 7	**1**
% Grades with Equity	0	68	**100**
Average Gap	-15.5	.23	**-1.10**
% Mobility	Not Available	20	**35**
%Pass All Tests	83	90	**81.40**

"You have to make it fun and meaningful for the students." Early HiDEA School #2 hds a higher percentage of economically disadvantaged, a higher percentage of minority teachers, a higher student/teacher ratio, a higher percentage of student mobility, a lower rate of instructional spending and a lower percentage of students in Special Education and Gifted. The school had practically no gap in any grade, but its percentage of students passing all tests was not as high as the avaerage HiDEA School.

AFFINITIES

1 Students: students spend the *time* necessary to learn the skill, tutoring in groups during and after school, peer tutoring, Lightspan (and other) academic rewards, adopt a
student program, students work to fulfill their own expectations, work on vocabulary, students create their own readings, ability grouping and instruction, economic factors, number of children in the family, student ownership of their learning, innovative instruction that motivates learning.

2 Administration: funding for special programs, implementation of the district testing program, school standards, setting the approach to learning, overflow of students from other schools are sent to Gregg, class size is high, staff development, provide media resources, also provide Spanish materials

3 Teacher: teacher exchange across grade level (teach at same time in each other's room), continuity (district curriculum/timeline), fun, challenging, creative, interesting learning process, testing to check skills, active student participation, high teacher expectations for students, testing strategies and formats, nontraditional teaching, teachers involved in after school programs to give students extra practice, tutoring by other teachers, daily praise and encouragement to students, participate in adopt a student, prayer, teach objectives, use of a variety of materials, variety of strategies

4 Teacher-Student Relationship: importance of grading to students and their families, commitment to success, nurturing

5 Parents: commitment to education, support of learning, in some cases a lack of parental involvement with homework, studying, practicing,

6 Community: gives time, money, commitment, a wish/desire for more was expressed

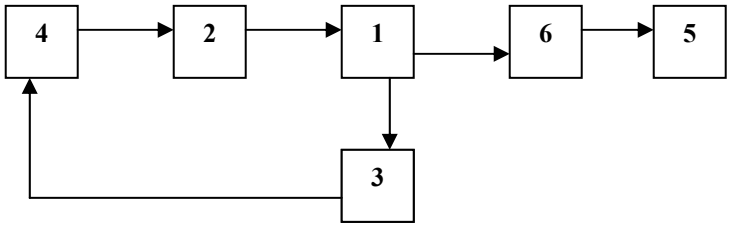
When considering the factors that produced their achievement profile, school #3 identified the following mental map as symbolized by the IRD and the SID. The IRD is the result of a cause-effect analysis. The drivers are the causes, and the outcomes are the effects. The SID is the visual or systems representation of the mental map.

Table 15 IRD Early HiDEA School #2									
	1	2	3	4	5	6	OUT	IN	Delta
1	X	<	^	<	^	^	3	2	1
2	^	X	^	<	^	^	4	1	3
3	<	<	X	^	^	^	3	2	1
4	^	^	<	X	^	^	4	1	3
5	<	<	<	<	X	<	0	5	-5
6	<	<	<	<	^	X	1	4	-3

Table 16
List of Affinities for Early HiDEA School #2

#	**Affinity**	**Role**	**Delta**
2	Administration	Primary Driver	3
4	Teacher-Student Relationship	Primary Driver	3
1	Students	Secondary Driver	1
3	Teachers	Secondary Driver	1
6	Community	Secondary Outcome	-3
5	Parents	Primary Outcome	-5

Figure 4
System Influence Diagram (SID) for Early HiDEA School #2



Mature HiDEA School #1.

Table 17

Comparison of State and Group Means with Mature HiDEA School #1 Characteristics			
	State	HiDEA	**Mature HiDEA School #1**
% Eco. Dis.	49	58	**98**
%TAAS Mobility	4.8	5.12	**6**
% Not Tested	3.8	2.27	**2**
% Minority Teachers	26	18	**83**
%Inexperienced Teachers	35	33	**49**
Instr. $/Pupil	3500	3534	**2832**
S/T Ratio	14.8	14.6	**22**
% in Sp. Ed.	11.9	13.0	**9**
% in Gifted	8.4	5.2	**5**
Years of Equity	0	1 to 7	**5**
% Grades with Equity	0	68	**33**
Average Gap	-15.5	.23	**0**
% Mobility	Not Available	20	**28**
%Pass All Tests	83	90	**98.80**

The Mature HiDEA School #1 also had a higher percentage of economically disadvantaged, a higher percentage of minority teachers, a higher percentage of inexperienced teachers, a higher student/teacher ratio, a lower percentage of students in Special Education and a lower level of instructional spending than the average HiDEA School. Although the school had a lower than average percentage of grades

with equity, it had an extremely high percentage of students passing all tests and 5 years of no gap overall.

AFFINITIES

1 Administrators: the teachers see their principal as supportive, and as one who receives requirements from the district and passes them on to the teachers.

2 Classroom teachers: take the plan and do it, fulfill roles of teacher, nurse, counselor, judge, etc . . .

3 Parents: the teachers see the parents as supportive, parents help in 21st CCLC, PTO, tutor program, bring food for events, school has Parent Reconnect Center, Clinic, GED, Parenting resume writing, children's activities for parents

4 Community: the teachers see the community as supportive, listing DARE, business partners, media partners, district partners, interested community members, celebrity involvement, provision of materials. Interestingly the teachers listed non-instructional staff, aides, and support staff as part of the community support, church supports by announcing and promoting school events and issues, school sends flowers to the church, school/staff trips and meals, TAAS Night

5 School Programs/Enrichment: teachers listed 'boy and girls day' with outside motivational speakers, clinic, dentists, immunizations, science lab, breakfast in the classroom, incentives, morning tutorials, individual instruction, whole group instruction, small group reading instruction, peer tutoring, media, taas tutorials, after school tutorials, Shell 'say yes' program, 21st Century Community Learning Centers in which parents are involved, Title I teachers pullout program by taking the successful students and letting the classroom teacher focus on accelerating the needy students

6 Support Staff/Team: the teachers see support staff as supportive, including pe teachers, librarian, nurse, counselor, computer labs

7 Teacher obligations: field lessons related to Project Clear, the district curriculum, strict guidelines about number of hours and subjects taken in staff development, home visits, the district has homework policy that teachers follow

8 All Staff Participation: professional development, sometimes all ancillary teachers take all the students so that the classroom teachers can have a collaborative planning time

Other: teachers said they were required to make home visits in cases where parents couldn't be reached by phone. Parent and community affinities are closely related in the minds of the teachers, as are 'all staff participation' and 'support staff/team.' Teachers said they had no choice several times. They seemed to imagine their organization as militaristic, with levels of hierarchy, driven by duty, obligation and code. However they expressed a feeling of being in a supportive community of mutual dependence and trust.

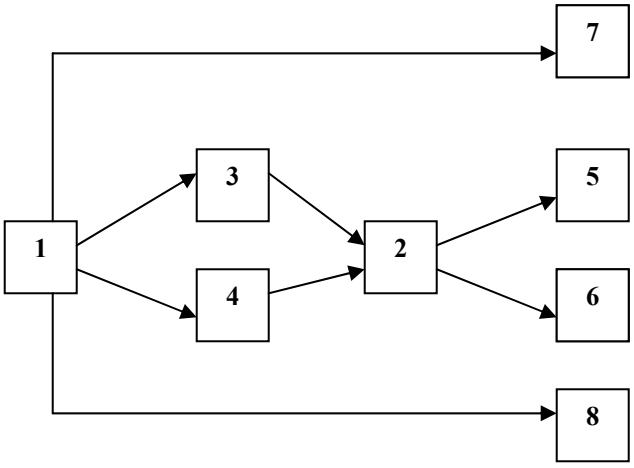
When considering the factors that produced their achievement profile, school #2 identified the following mental map as symbolized by the IRD and the SID. The IRD is the result of a cause-effect analysis done by a group of school #2 teachers on factors they produced in a brainstorm activity. The drivers are the causes, and the outcomes are the effects. The SID is the visual or systems representation of the mental map.

Table 18 IRD Mature HiDEA School #1											
	1	2	3	4	5	6	7	8	OUT	IN	Delta
1	X	^	^	^	^	^	^	^	7	0	7
2	<	X	<	<	^	^	-	-	2	3	-1
3	<	^	X	-	-	-	-	-	1	1	0
4	<	^	-	X	-	-	-	-	1	1	0
5	<	<	-	-	X	-	-	-	0	2	-2
6	<	<	-	-	-	X	-	-	0	2	-2
7	<	-	-	-	-	-	X	-	0	1	-1
8	<	-	-	-	-	-	-	X	0	1	-1

Table 19
List of Affinities for Mature HiDEA School #1

#	Affinity	Role	Delta
1	Administrator	Primary Driver	7
3	Parents	Secondary Driver	0
4	Community	Secondary Driver	0
2	Classroom Teachers	Pivot	-1
7	Staff Development	Secondary Outcome	-1
8	All Staff Participation/Ancillary	Secondary Outcome	-1
5	Programs/Enrichment	Primary Outcome	-2
6	Support Staff	Primary Outcome	-2

Figure 5
System Influence Diagram (SID) for Mature HiDEA School #1



Mature HiDEA School #2.

Table 20

Comparison of State and Group Means with Mature HiDEA School #2 Characteristics			
	State	HiDEA	**Mature HiDEA School #2**
% Eco. Dis.	49	58	**61**
%TAAS Mobility	4.8	5.12	**4**
% Not Tested	3.8	2.27	**2**
% Minority Teachers	26	18	**35**
%Inexperienced Teachers	35	33	**31**
Instr. $/Pupil	3500	3534	**3006**
S/T Ratio	14.8	14.6	**18**
% in Sp. Ed.	11.9	13.0	**6**
% in Gifted	8.4	5.2	**11**
Years of Equity	0	1 to 7	**5**
% Grades with Equity	0	68	**33**
Average Gap	-15.5	.23	**0**
% Mobility	Not Available	20	**11**
%Pass All Tests	83	90	**100.0**

This schools resembled the average in most categories, but had a lower percentage of students in Special Education and a higher percentage of students in

Gifted. This school had no gap and all students passed all tests.

Seven teachers participated in this focus group. All except one had many years of experience in education and at the school. The campus was beautiful, well equipped and situated in a trendy area of a large urban center. The school was a center for Multiply Impaired and Gifted students. The principal had been at the school one year, and was referred to as strong, but teachers' comments showed a 'wait and see' attitude when they discussed the role of the administration.

AFFINITIES

Government Mandates (1) – Other schools called this testing, but in this mental model testing was mandatory and intrusive. The teachers viewed mandatory testing as a Texas requirement that had spread to the national government and into almost every classroom.

Community Involvement (2) – This Affinity referred to the involvement of the PTO and area businesses in charity and enrichment activities.

Resources (3) – The teachers felt that the school was blessed with many instructional and enriching resources.

Student Motivation (4) – Although there was a recognition that teachers influence student motivation, there was a strong sense that students' control of their own motivation was a better description of this Affinity.

Teachers (5) – This Affinity described quality teachers. Quality teachers create a positive classroom atmosphere, persist, use time wisely, protect the children, have high levels of education and training, and are dedicated.

School (6) – Obviously, this Affinity referred to the people and climate rather than the facilities. The 'school' was described as having high standards, a push to succeed, a competitive spirit, administrators that lead and a 'success' attitude.

Parental Involvement and Influence (7) – Parents were seen as having strong influence for positive and negative impact. Their active involvement on behalf of their children was seen as having a positive impact, while their indifference was seen as having a negative impact. Teachers identified cultural characteristics, the

importance of education in the home and knowledge of state testing as factors that influenced parent involvement.

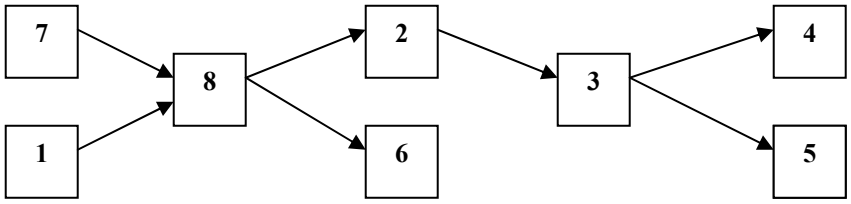
Students (8) – This Affinity referred to the needs of the students resulting from physical and intellectual conditions of the children from birth, economic situations, and testing stress.

Table 21 IRD Mature HiDEA School #2											
	1	2	3	4	5	6	7	8	OUT	IN	^
1	X	-	^	-	^	^	-	^	4	0	4
2	-	X	^	-	-	-	<	<	1	2	-1
3	<	<	X	^	^	-	<	-	2	3	-1
4	-	-	<	X	-	-	<	<	0	3	-3
5	<	-	<	-	X	-	<	<	0	4	-4
6	<	-	-	-	-	X	<	<	0	3	-3
7	-	^	^	^	^	^	X	^	6	0	6
8	<	^	-	^	^	^	<	X	4	2	2

Table 22
List of Affinities for Mature HiDEA School #2

#	Affinities	Role	Delta
7	Parent Involvement/Influence	Primary Driver	6
1	Government Mandates	Secondary Driver	4
8	Students	Secondary Driver	2
2	Community Involvement	Secondary Outcome	-1
3	Resources	Secondary Outcome	-1
6	School	Primary Outcome	-3
4	Student Motivation	Primary Outcome	-3
5	Teachers	Primary Outcome	-4

Figure 6
System Influence Diagram (SID) for Mature HiDEA School #2



Characteristics and Relationships of the Mental Models

Affinity Patterns

The following table presents the Affinities identified by the focus groups with the number of groups that identified it (Strength), its Role as Primary Driver (PD), Secondary Driver (SD), Pivot (P), Secondary Outcome (SO) or Primary Outcome (PO), and the classification of the groups that identified the Affinity as a part of their Mental Model. The Power rating was calculated by giving each of the Roles a value and adding the value for each time the Affinity appeared. For example, Primary Driver was valued at 4 and since Administration appeared 4 times as a PD, its Power Rating was 16. Primary Driver was assigned a value of 4. Secondary Driver was assigned 3. Pivot was assigned 2. Secondary Outcome was assigned 1, and Primary Outcome was assigned 0. The lines delineate the three tiers that the Affinities naturally separate into by Power Rating.

The Affinity that showed the highest Power Rating by a large margin was Administration. The focus groups identified supportive, visionary, focused leadership most often and with the greatest influence in producing the achievement in their schools. The next strongest Affinity was Attitudes and Relationships between teachers and students and among staff. Leadership and Relationship form the first tier of Drivers overall. The second tier has Quality Teachers, Data Analysis/Decision Making, Parents, and a focus on Students. Schools that have teachers in this second tier demonstrate an empowered stance, while schools that locate teacher influence in the third tier demonstrate a hopeless stance.

Table 23
Affinity Pattern Analysis

Affinity	Frequency	Role	Power
Administration	5	PD,PD,PD,PD.PD	20
Attitudes/Teacher-Student Relationship/Clim.	3	PD, PD,SD	11
Data Analysis/Decision Making	2	PD,SD	7
Parents	5	P,PO,SO,PD,PO	7
Students	2	SD, SD	6
Teachers	4	SO,SD,SD,PO	5
Community	3	P,SO,SO	4
Staff Development	2	SO,SD	4
Curriculum	2	PO,PD	4
Assessment	1	PD	4
Early Reading Intervention	2	SO,P	3
ESL/Bil/ED Program	1	SD	3
Vertical Alignment	1	SD	3
Reward/Motivation	1	SD	3
Communication	1	SD	3
Government Mandates	1	SD	3
Support Staff	2	PO,P	2
Ancillary Participation/Collegial Support	2	SO	2
School/Staff	2	PO, P	2
Team Teaching	1	P	2
Grouping	1	P	2
Special Education Program	1	SO	1
Materials/Resources	2	PO, SO	1
Interdisciplinary Integration	1	SO	1
Homework	1	SO	1
Continuity	1	P	1
Programs/Enrichment	3	PO,SO,PO	1
Technology	2	PO, PO	0
Student Motivation	1	PO	0
Pullout Program	1	PO	0
Tutoring	2	PO	0

Affinities related to strategies were identified less often and assigned less influence were Staff Development, Programs/Enrichment, Assessment, Community, Support Staff, Students, Vertical Alignment, and other programs and strategies. The Affinities identified more and given more influence by Mature HiDEA Schools

were Parents and Community. On a continuum with People at one end and Activities at the other, Mature HiDEA Schools were more at the People end while Gap Schools were more at the Activities end. In addition, Mature HiDEA Schools had simpler mental models averaging 7 Affinities. Early HiDEA Schools averaged 9, and Gap Schools averaged 13.

The Elements of Gap, Early HiDEA and Mature HiDEA Groups

Both Gap and HiDEA Schools are either Recognized or Exemplary. The schools working with ethnically and economically diverse populations were achievement focused and used research-based strategies found to help all children. In general, the context of federal and state laws seems to exert a homogenizing influence over schools such that schools have very similar cultures. Given the general influences and the similar populations, one might expect the elements between the groups not to be much different. Gap and HiDEA Schools do differ in their patterns of achievement equity. A difference in the elements of the mental models of these two school populations would be of interest.

Table 24 Elements of Gap and HiDEA Schools' Mental Models	
Gap	**HiDEA**
Staff	
Parent Involvement	Parental Involvement
Communication	Teacher-Student Relationship
Team Teaching/Quality Teachers	Teachers/Staff=Team/
District Curriculum	District Curriculum/Government Mandates/Resources/Materials
School	Effective Use of Personnel
Extra Programs	Sp. Ed./Bil/ESL
Administration	Administrators
Technology	
Homework	
Disaggregation of Data	Data Analysis/Decision Making
Tutorials/Special Programs	Tutoring/Special Programs
Collegial Support	All Staff Participation
Grouping	Pull Out Program
Continuity	
Early Reading Intervention	Early Reading Intervention
Staff Development	
Vertical Alignment	
Rewards-Motivation	Student Motivation
High Expectations	School (Success focus)/Attitudes
	Teacher Obligations
	Community Involvement
	Assessments
	Student (Needs Focus)

The elements were similar, but the table didn't show intensity, frequency, quality or duration of the activities listed in the mental models of each. Certainly the way in which the elements were enacted had much to do with their impact on achievement and equity.

Early and Mature HiDEA Schools not only had similar populations, but they also had similar achievement patterns, that is, they had high achievement and high equity. HiDEA Schools can be divided into Early HiDEA Schools, which were those that had only had high equity for a year or two. The pattern of Early HiDEA Schools was that they moved back and forth between Gap and equity. Mature HiDEA

Schools have had high equity for at least three years. This was a very small group statewide. Any difference in the elements of the mental models of these two school groups would be of interest, however. (See Table 33)

When the definitions of the Affinities are compared the groups show very close resemblance of elements. Apparently schools have similar elements in their mental models but are getting different results. Possibly the structure of the mental models has more to do with the variance in effect than the elements of the models.

Relationships of Gap and HiDEA Mental Models

The mental models differ in regard to the number of Affinities they incorporate, the inclusion and placement of Affinities with high Power Ratings, the length of their causal chains, double input relationships and the existence and nature of reinforcing loops. These attributes of the structure of the mental models will be the basis of the analysis in this section.

Gap Schools

Gap School #1's sixteen Affinities made it the most complex of the mental models of any of the schools in the sample. Higher performing schools tended to have shorter mental models. Mental models not only are a representation of reality, but they are also a shorthand for it. Complex models can lose clarity that impedes effective implementation.

Table 25 Elements of Early and Mature HiDEA Schools' Mental Models	
Early HiDEA	**Mature HiDEA**
Administrators	Administrators
More and Effective Use of Personnel	
Pull Out Program	
Materials	Resources
Tutoring	School Programs/Enrichment
Assessment	
Ongoing Data Analysis/Decision Making	
Special Education/ESL/Bilingual/Student Need	Student (Need Focus)
Curriculum	Government Mandates
Attitudes/Relationships	School (Success Focus)Teacher-Student Relationship/Staff Team
Parents	Parental Involvement
Teachers	Teachers
Community	Public Involvement
	Teacher Obligations
	Ancillary Staff Supports Teachers
	Student Motivation

This model began with Administrators and High Expectations as the Primary Drivers, but these two acted on the teachers who then worked with the data, planned and implemented strategies. The mental model of these teachers not only had both elements of the first tier of Affinities by Power Rating, those being Administrators, which by their definition could easily be understood as effective leadership, and Attitudes, or High Expectations in this case, but also had them as primary drivers at the beginning of the SID. Two of the four Affinities from the second tier can be found next, Data and Teachers.

This model had a three-connection chain near the beginning and a five-connection chain at the end. When the primary drivers are separated from the outcome by many steps the energy of their influence can be lost. This could be another reason to prefer shorter, simpler mental models.

Gap School #1's mental model had a double input relationship in the middle. The nature of this relationship suggested that the school's reward/motivation to encourage appropriate student behavior may have been working at odds with its grouping strategy, which both drove the tutorial program. A better role for Rewards/Motivation may be to become part of the Grouping-Rewards-Tutorials-Homework causal chain. Not only was it possible that this loop was not increasing productivity, it's placement in the middle of the diagram, or model, meant that the relationship included Pivot and Secondary Outcome Affinities. By definition these Affinities had little to no power to affect other elements of the model, and for this reason, the loop had almost no positive effect when placed here. It also further complicated the model, which had already been identified as problematic.

Gap School #2 had a shorter mental model, but it still had some complications.

Administrators, who drove a Team Teaching Affinity that drove the Staff Affinity, initiated the model. Again, this seemed to be positive because it recognized the critical role of leadership while at the same time claiming an empowered position for teachers and other staff members as drivers and not as outcome.

The shorter nature of the model helped it have fewer multiple stage causal chains. It had one three-connection chain at the beginning, but none over two after that. This was good because it kept the model simple and economized the energy of the drivers for more effective impact.

This model's complication was that it was one big double input relationship. Administrator drove Parent Involvement, but so did Extra Programs from a different direction. A more effective mental model might have the Parental Involvement Affinity becoming a Secondary Driver itself upon being empowered by the Principal. It could connect to support Teaching or Staff ideally instead being driven also by programs.

HiDEA Schools

Early HiDEA School #1 had the second largest mental model. The model had many strengths, but it also had a few weaknesses.

It began with a strategy instead of leadership or relationship, but its second element was Data Driven Decision Making, a second tier Affinity by Power Rating, and then it connected with Leadership and Relationship. This model strongly focused on achievement, relationships, student needs and effective personnel, but it left curriculum to a weak position at the end of a long causal chain. This model had a nine-connection causal chain, the longest of any of the models. The teachers saw strategies as key elements instead of part of the whole. By making individual strategies a large part of the model, they unnecessarily complicated the model and took efficacy away from the primary drivers.

In addition, the model ended with a reinforcing loop comprised of Materials driving Early Reading Intervention, which drove Tutoring, which reconnected to Materials. While the loop accelerated and didn't cause any conflict, it may have cut itself off from the influence of the more powerful drivers. This may not be of

concern to a school that didn't have one single student in any grade fail any subject on the TAAS in 2002, but the success may be easier to maintain with a simpler and more direct mental model.

Early HiDEA School #2 had the simplest and most direct mental model of all the schools in this sample. The six Affinities all formed a chain except for one that formed a loop with the initial driver. The model began strongly with Relationships and Leadership, which drove Students, which drive Teachers, which returned to influence Relationships. This loop accelerated and reinforced the influence of these Affinities on Community and Parents. This school's mental model didn't include strategies separately, but incorporated them into the concepts of Leadership, Teacher Action, Student Active Learning and Parental Participation. The placement of the loop at the beginning reinforces the already powerful influence of Relationships and Leadership. This seems to be a strong model.

Mature HiDEA School #1 has had high achievement and high equity for at least three years. The school also had a simple mental model of eight Affinities. This model had a couple of unique aspects.

The model began with Administration like most of the others, but the next Affinities were Parent Involvement and Community Involvement. These two drove Teachers. All of these were powerful first and second tier Affinities (except for Community Involvement which was the highest third tier Affinity), which can be powerful at the head of a mental model. This was the first model to put parents and community before teachers. This could relate to the unique position of this school as

one that has had high achievement and high equity for at least three years. Parent and community involvement may play a key role in achieving equity.

There was a double input relationship at the beginning of the model involving the principal influencing parents and community members equally, and the parents and community members influencing teachers. The teachers did not see a relationship between parents and community members as factors in the school. A structure that might increase the influence of parents, community members and teachers might be a reinforcing loop involving the Affinities all driven by the administration.

Mature HiDEA School #2 also had a simple 8 Affinity mental model. As a unique campus with a large population of special needs students, a unique mental model might be expected. This model started with Parental Involvement and Government Mandates, which drove Students. These Parental Involvement was a second tier and Curriculum, which was what was referred to by Government Mandate, was a third tier Affinity by Power Rating. Leadership and Relationship were missing. Student needs were seen to drive Community Involvement, which drove Resources. Teachers were a Primary Outcome, which was a very weak position.

Between Group Relationships of Mental Models

Gap Schools had an average of 12 Affinities in their mental models while HiDEA Schools had less than 7. HiDEA Schools had shorter, simpler mental models that were clearer and allowed for more effective prediction of demands so they were

able to align their behavior with the actions of the rest of the staff. One Gap and one Early HiDEA School included strategies in their mental models. The other schools were able to see strategies as part of other larger factors. Early HiDEA Schools stand out from the others for their placement of students' human needs in the model in places of strong influence. Mature HiDEA Schools uniquely placed parents and community members in places of high influence in their mental models.

Comparison of the Mental Models of the Focus Groups with those in the Literature

Gap School #1 and Early HiDEA School #1 most closely resembled the Dominant Deficit Model found in the literature. They were assessment, data, and remediation driven in there models. This is not to say they were unique in using assessments, data and remediation, but it is salient to note the disappearance of these factors in the more equitable schools in favor of relationships and parent involvement.

Strong leadership was a critical component of both the Dominant Deficit Model and the Minority Challenge Model. All models showed some form of leadership near the beginning of their mental models. The traditional role of the principal was most often cited, however, high expectations, assessment data, relationships and district-mandated curriculum were also placed in leadership roles in the models.

The Minority Challenge Model was most well represented by Early HiDEA's emphasis on caring with students and Mature HiDEA's involvement of parents and community members. The step toward accepting student culture and home culture may be indicative of mental models that eliminate cross-cultural communication

barriers or even learn to use them in a positive fashion. One Early HiDEA School's principal threatened to send teachers home for blaming students or parents for low achievement. The school in the harshest social conditions happened to be a Mature HiDEA School, and the principal required teachers to communicate with parents, even if it meant home visits. Teachers reported that home visits were common. HiDEA Schools seem to have made movement toward recognizing that their school could not achieve the highest levels of performance with all the children without addressing the student and their world.

Summary

The findings of the statistical data describing the population of diverse, high-performing schools were reported in this chapter. This description was used to illuminate the position of the schools chosen for the case studies in their relation to their group, either Gap, Early HiDEA or Mature HiDEA.

Two focus groups were held from each of the three categories chosen using the criteria from the quantitative study, Gap Schools, Early HiDEA Schools and Mature HiDEA Schools. Each focus group participated in the IQA process, and the results were reported here. Affinities were listed for each group and for the total sample. A Power Rating was created to measure the influence the group of schools gave each Affinity. Comparisons were shown of the elements between Gap and HiDEA Schools and between Early and Mature HiDEA Schools. A description of the structure of the mental models was also given.

Simpler mental models were associated with high equity, and high equity facilitates higher achievement. Identifying parents and community members as powerful influences in the school also was associated with higher equity in these simple case studies. Early HiDEA Schools identified the importance of valuing the emotional and cultural lives of their students. This was a difference from Gap Schools. Gap schools focused their influence on strategies while HiDEA focused their influence on people.

CHAPTER V

Summary, Conclusions and Recommendations

Introduction

This chapter contains a summary of the major findings of this study, a discussion of those findings in the context of the study, a discussion of the findings in relation to practice and the literature and recommendations for future research.

Significant Findings

Statistical Findings

This study did not identify the total number of diverse campuses in Texas, but 365 of the campuses were identified as high performing. Less than half of the diverse, high performing elementary schools demonstrated equity for at least one year. Only about five percent of the diverse, high performing elementary schools had demonstrated equity as defined in this study for three or more years. This represents even a smaller, and likely miniscule, percentage of the total population of diverse schools. While it seems a few diverse schools have found a path to high performance, the degree and consistency of this success has been critically impacted by their general inability to achieve equity. Equity both raises overall achievement and permits its continued growth.

From the data, three groups appeared, the Gap Schools, the Early HiDEA Schools, and Mature HiDEA Schools. Unfortunately the data showed that most schools only achieved equity temporarily. Early HiDEA Schools (1 or 2 years of equity) were less mobile, more economically disadvantaged, higher achieving, had

more minority teachers, had more students in Special Education, and had fewer students in Gifted and Talented than Gap Schools. The Mature HiDEA Schools differed from the Early HiDEA Schools in that they had fewer minority teachers, assigned fewer students to Special Education, and had fewer inexperienced teachers.

Focus Group Findings

There was a general agreement among all the schools as to the factors affecting achievement and their relative strength of their influence. Still the differences in the grouping and placement of the factors in the mental models seemed to suggest some patterns. Gap Schools separated factors out into components. This increased the number of factors in their mental models. Gap Schools had generally longer and more complicated mental models. They were generally more strategy, assessment and data oriented. The mental models of HiDEA Schools were generally shorter, simpler, and more organic (humanistic or cultural). HiDEA Schools grouped strategies into larger categories that simplified and shortened their mental models. Early HiDEA Schools showed a shift in focus to student needs and relationships. Mature HiDEA Schools showed a further shift in focus to strong parent and community involvement.

Gap Schools and HiDEA Schools' mental models showed relationships to the models predicted by the literature. The Gap Schools showed a relationship to the Dominant Deficit Model with their emphasis on assessment, testing and remediation. This is not to say that the HiDEA Schools don't use these strategies, but their focus is

different. The Minority Mental Model from the literature supports identifying academic needs, even using assessment, but it does not support attributing the need to a deficit in the student's culture, family or social context. The different, more culturally responsive focus seems to be related to increased equity. HiDEA Schools showed a relationship to the Minority Student Centered, Parent Involvement Model. These factors not only appeared, but appeared in powerful positions in the HiDEA Schools' mental models.

A powerful combination of related factors appeared repeatedly. Assessment, Data Analysis and Decision Making were identified by nearly all the focus groups as strong factors in producing high achievement. The role of these related factors differed between the Gap and HiDEA Schools.

Discussion of Findings

Discussion of Statistical Findings

The data suggested that the main difference between equitable schools and inequitable schools is not just that they are equitable, but that they are equitable throughout all the grades. Equity is school wide. Some schools may be using new strategies based on a better multicultural understanding, while other schools may be getting a better multicultural understanding by implementing an 'equity first' vision. Either way, it is likely that equitable schools differ from inequitable schools in two aspects, the mental model shared by the school staff and the resulting attitudes and behaviors that their mental model supports.

Some diverse, high performing schools have overcome the factors identified in literature on the achievement gap. That is not to say that those factors are unimportant. Certainly a level of funding is required for efficient operation, raising achievement and providing equitable opportunity. Diverse, high performing schools average $3463 instructional spending per pupil. Districts should provide adequate facilities, ample instructional funding and low student-teacher ratios, but these are more barriers to high, equitable achievement than paths toward it.

The descriptive portion of the study was valuable for identifying the possible barriers to equity, but provided few suggestions for improving equity. The descriptive study did suggest, however, that environments higher in minority students (parents) and teachers could help create a more student centered approach to schooling.

Discussion of Focus Group Findings

The qualitative portion of the study did provide a possible path to improving equity, however. The factors and their appropriate influence were identified by the focus groups. The implications of these factors for the study and for practice were significant. This study suggests that giving priority to data analysis, leadership, relationships and attitudes may be critical to improving equity and achievement.

While all schools used some sort of regular system of assessment to monitor the progress of students toward mastery of the curriculum, schools differed in their use of the data. Gap Schools tended to use the data to group students for tutoring, but

HiDEA Schools also used the data to work directly on the curriculum and instruction being used during regular class time. Some HiDEA Schools also spoke of using the data to make modifications for individual students' instructional plan. These uses of assessment data coincided with the trend among HiDEA Schools to consider child development and relationships equally as important as instructional strategies.

Leadership was a critical component of high equity and high achievement. Leadership was usually provided by the principal, but it was also provided by strong district mandates, experienced teachers or strong parental involvement. This study implies a definition of leadership. Leadership first establishes appropriate attitudes and requires relationship as a strategy. Teachers were required to make home visits to ensure communication with parents. Former teachers visited their students to encourage them. Special instructional programs started with the goal of solidifying the students' self esteem. On a second level of importance, leaders organize a system of data-driven decision making. This mechanism is both consistent and continuous. Leaders make sure that parents are the instructional leaders at home. They are provided with information that allows them to support school policy, supervise homework, inspect schoolwork for quality, and set appropriate goals for their children. Parents are provided with opportunities to develop as parents, individuals and learning community. Leaders see the students as children first. Leaders require the organization to contribute to their healthy development as a strategy for academic improvement. Leaders recruit and retain highly qualified and highly motivated teachers, and they create time and structure for collaboration. On a

third level of importance, school leadership recruits community support, provides effective staff development, requires the implementation of a strong curriculum and uses assessment to provide feedback for decision-making. On the lowest level of importance, principals supervise the implementation of programs and strategies. Principals remove barriers that impede the instructional and relational work of teachers such as bureaucratic requirements. The work with these focus groups suggests that principals can err by failing to address these factors or by giving importance to factors that have no drive themselves. This priority of leadership activity magnifies the effectiveness of leadership.

Together, attitudes and relationships formed the second critical component of improving equity and achievement. Highly successful schools demonstrating this characteristic truly expected every student to pass every test. 'All Children Can Learn' was not just a slogan in these schools. High expectations meant 100% success for students. Attitudes were supported by relationships. Highly successful schools considered the emotional, physical and psychological health and development of the students as a strategy that was just as important as testing and remediation. Highly successful schools viewed relationships between students and adults as the strategy for meeting the needs of the students.

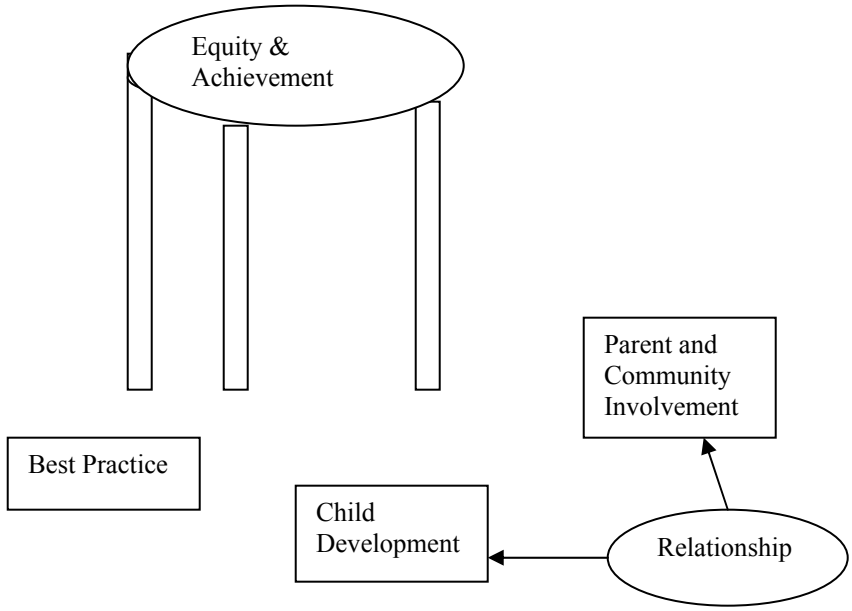
The study showed that the mental models of all schools worked with more or less the same building blocks. Legal, political, historical and cultural forces work together to create similar environments for teachers across Texas and most likely the

United States. However, this study also showed that schools create different cultures by rearranging or combining these building blocks of school culture. The Gap Schools resembled the Dominant Culture Deficit Model with their emphasis on standards, testing and remediation, while the HiDEA Schools resembled the Minority Student Centered, Parent Involvement Model. The standards approach may become problematic when it attributes deficit not to academic development, but to culture and socio-economic factors outside the control of the school. The standards approach may also become problematic when it gets in the cycle of testing and remediation that limits the exposure of students to enriching curriculum and limits the students' ownership of their learning.

Implications

The results of this study suggest a framework that allows a district to analyze where they are in relation to their equity and achievement goals and identify the next step toward those goals. This research suggests that there are three foundations to an equitable, high achieving schooling system. The mental model, or metaphor, suggests that schools should push forward on all three foundations simultaneously in order that the 'student' not fall off. Schools and districts that are not yet high performing or equitable can use the Gap School characteristics to set goals and priorities. The characteristics of the Gap Schools are one foundation for high performance. These schools must energize their leadership, set high expectations, allow no excuses and place no blame, provide a

Figure 7
Three Foundations of an Equitable, High Achieving Schooling System



strong curriculum, assess regularly, implement data driven decision-making, offer many opportunities for exposure to academic material and do the other things suggested by the Gap Model. In order for a school to master the attitudes, processes and strategies of high performance, it can extend that high performance to all children by raising its expectations to 100% success, making child development a major strategy, and by modifying the standards processes to the new child-centered approach. For a school to achieve high performance for all student groups, it can focus on parent and community involvement. The school will learn how to empower the parents and community members to take appropriate roles in the learning community.

The results of this study suggest a definition of the roles of district administrators, campus administrators, teachers and even parents. The role of the principal, or the campus administrator was used in the previous section to show how the study can be used to define roles of learning community team members. Likewise, district administrators must fulfill their role, and this study suggests some actions they should take. First, district administrators need to understand mental models and be familiar with the foundation suggested above in order to orient new administrators. The district must support the 'no excuses, no blame, 100% passing' expectation on each campus. The district must put in place a strong aligned curriculum that provides resources and materials that connect the student and the curriculum. The district should set the expectation of meaningful parental involvement. The district must support a data driven decision-making process. The district should offer support with assessment, communication, goal setting and staff development.

The study offers a definition of the teachers' role in improving equity and achievement as well. Teachers should be masters of implementation, collaboration and communication. Teachers should have 100% success goals. Teachers should see themselves as being pivotal, or even secondary drivers, in their own mental model. They should not accept a powerless position, but neither should they seek to be primary drivers. Teachers should demand high quality staff development and support in order to implement the curriculum with effective instruction. Teachers should work with principals to create the time and the structure for collaboration. Teachers

should make parent contact and involvement an integral part of their work. Teachers should nurture students, seek to appreciate their challenges and needs in their lives and offer support. They should team with principals, parents and community members to form safety networks for meeting the needs of children.

The study suggests that parents need to team with the school and the community to meet the needs of their children. Parents should seek to understand the mental model of the school in order to know how to work with school personnel to help their children in getting homework done, in checking student work for quality and in supporting behavioral and academic expectations. Parents need to make some time to volunteer in the school. The school must be a part of the family's model of life.

The results of this study suggest that mental models could be used as a metacognitive tool that would allow schools to visualize their shared mental model and work on it as a group. The teachers participating in the focus groups commented that they found the sessions and their results enlightening and uniting. The Interactive Qualitative Analysis process helps a group make its shared mental model manifest. Once the model is out in the open, school staff as well as students and parents can enter into discussions on improvement. Discussions can start with the complexity of the model, the factors in the model, the location of the factors in the model, the presence of loops and the presence of double input relationships. These discussions will no doubt lead to others and to skill in analysis. These skills can then

be used to investigate the mental models held by the Reading teachers or the Math teachers or other grade levels and programs.

The results of this study suggest a framework for decision-making. Time and resources are best spent on factors identified as drivers because they not only bare their own fruit but they also influence other factors to be more productive. Mental models also can suggest where interventions will have an impact down the causal chain.

The results of this study offer a guide and a foundation for staff development that will impact equity and achievement. Staff development can be made more appropriate by identifying the school's place on the path to improved equity and achievement by focusing on the attitudes and actions that will take the school to the next level. Staff development can teach and support the roles mentioned above for district administrators, campus administrators and teachers.

The results of this study confirm the existence of two mental models relating to the achievement gap. The Dominant Deficit Model is blind to the support schooling has given to White middle class students and the lack of support to minority, poor students. Not only is it blind to that duality but it also assigns deficit to, or blames, the students and their families for the deficit created by its own lack of support. To correct the situation, the school using this model enters into a loop of identification and remediation without changing the systemic lack of support that causes the deficit. The school that works hard at this model will improve over all academic performance, but it will also continue to battle the gap. The Minority

Student-Centered Model focuses on improving performance within a context that supports the student and the student's family. This model lays no blame and accepts no excuses. The school takes responsibility for the academic achievement of every child and works to bring the student, the parents and the community together to support the process. The Minority Model seems to hold more promise for achieving equity and maintaining it. With no gap to lower averages, these schools reach unbelievable levels of achievement up to 100% passing rates.

Recommendations for Further Research

Equity needs to be studied on its own to establish a theoretic structure that allows further research. This study suggests that although equity is defined as a comparison of achievement between groups, equity may not relate to other variables in the same way as achievement. While achievement is often related to ethnicity and economic status in the literature, in the qualitative portion of this study equity was more related to expectations, attitudes, relationships, especially with children, and parent involvement.

This study should be followed with a study that seeks to assess how these findings relate to those of a wider sample. A survey based on these findings should be distributed to the whole population of Diverse, High Performing Elementary Schools in Texas. The findings from this study should be compared to those of diverse, high performing secondary schools in Texas. Of course, the research could be duplicated in other states or countries.

The mental model of teachers with respect to practice should be studied. What is the shared mental model of expert reading and math teachers? The mental models of teachers shed light on the structure of achievement and equity in this study. They may also be a tool to examine achievement in specific subjects, such as reading and math.

The use of mental models as a diagnostic tool for schools should also be studied. Schools make campus improvement plans yearly. Schools use a variety of tools to analyze problems, determine needs, prioritize needs, and determine appropriate strategies. The use of mental modeling as a tool in this study had several positive outcomes. Participants were engaged, showed enthusiasm, worked as a group, discussed their practice at a deep level, and were confident that their products (IRDs and SIDs) were valid.

Summary

Two general categories of mental models of equity in academic achievement appear in the literature. Both categories of mental models have many names and include many variations, but they still fall naturally into the two categories. The standards based mental models includes standards, testing, remediation, early intervention, best practice research based instruction, aligned curriculum (between written, taught and tested curriculum), and accountability, or consequences. This mental model addresses cultural differences by generally treating all children the same. In this way, students are acculturated and tracked for appropriate intervention and academic success. Relationships are generally a byproduct of doing the work in

these mental models. The other category is the culturally based mental model. This category of mental models focuses on the addressing the differences of children using the strengths of the children's cultures, the school's resources and the teachers' concern and expertise. Parent and community involvement are prominent in these models. Enrichment, opportunity for wider experiences, expression, social action and democratic participation are common activities for children in these models. High expectations are a key component of these models. Models based on cultural sensitivity recognized the necessity of curriculum, testing, interventions and accountability, but this focus maintained a developmental focus. Relationships are a critical component of the work in these models.

The quantitative portion of the study supported some of the assertions of the literature. High achieving schools did tend to be more White, have fewer economically disadvantaged students, have more students in the Gifted program and have less in the Special Education program. However, in diverse, high performing schools economic disadvantage only accounted for 16% of the explanation of the achievement variable. Equity variables explained another 10%, and other variables accounted for less than 10%. Equity was most strongly related to other variables of equity. The achievement was the strongest non-equity variable related to equity, and it only explained 16% of the Equity variable.

Through brief case studies of six diverse, high performing schools a picture of equity and achievement emerged. Some similarities that produced high achievement seemed to be strong leadership, high expectations, and supporting relationships.

Some differences that seemed to produce equity and higher, more sustained achievement were simpler mental models, student centered approaches, parent involvement and community involvement.

The population of diverse, high performing schools separated into the Gap Schools, the Early HiDEA Schools and the Mature HiDEA Schools. The Gap Schools had fairly high achievement but couldn't reach the highest levels because of significant gaps between White and minority or economically disadvantaged student performance. Early HiDEA Schools achieved equity for a year or two but fell back to either to Gap School status or out of the high performing range altogether. Only a small number of diverse, high performing schools were able to achieve at high levels for protracted periods of time, and equity was the key factor that enabled their sustained success.

The standards based mental model has received the strongest support from legislatures, think tanks, and education agencies. This study suggests that the exclusive use of these models may lead schools to a level of success, but with great effort and frustration. This study suggests that sustained and more satisfying success will only be achieved by making relationships, child development and parent/community involvement an integral part of the reform model.

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VITA

James Ray Benson was born in Corpus Christi, Texas in 1954 where he resided with his parents for four years. His early childhood was spent in Louisville and Frankfort, Kentucky, while his adolescent years were spent in San Antonio, Texas. James lives with his wife in Pflugerville, Texas, and has three young adult children, James, Joshua and Sharon. James obtained his Bachelor of Arts Degree at The University of Texas at Austin. Mr. Benson also obtained a Master of Church Music from Southwestern Baptist Theological Seminary in Ft. Worth, Texas and worked for Baptist Hispanic churches in Texas for eighteen years. He obtained a bilingual teaching certificate and taught for three years. Mr. Benson then obtained the Master of Educational Administration at The University of Texas at Austin while he served in the assistant principal role for three years. Mr. Benson has been a principal and district administrator for three years.

His permanent address: **1102 Thackeray Lane**

Pflugerville, Texas 78660

The author typed this dissertation.